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ON SYRUP OF ORANGE FLOWERS.

By J. B. Moore.

To obtain a fresh and nicely flavored article of orange flower water is often a difficult matter. There is scarcely a distilled water more variable in quality as found in the market. Its tendency to degeneration and deterioration is so great that it is impossible to preserve it for any considerable length of time in good condition. Its delectable flavor and natural sweetness of odor soon become so much impaired as to unfit it for the purposes for which it is generally employed. Preserved with sugar in the form of syrup is the only way in which it can long be preserved and rendered available for use.

As a vehicle or flavor to disguise the taste and improve the flavor of the bitter tonics, rhubarb, various saline and other unpalatable remedies, and to impair the disagreeable odor of some offensive medicines, it is unsurpassed by any of the other distilled or aromatic waters. Its usefulness is not alone confined to its qualities as a flavor, but it also possesses decided remedial powers as a nervous sedative, and is highly esteemed by some medical men for its virtues in allaying nervous irritability and inquietude, and composing nervous restlessness, affording placid and refreshing sleep when other more popular remedies have failed. But owing, I presume, to the great uncertainty experienced by physicians in obtaining a good article when prescribing it, and the feeble and almost worthless character of the officinal syrup, it has lost much of its popularity and has fallen compara-

tively into disuse. It is now rarely ordered in prescriptions except by a few medical men who have experienced its therapeutic value in certain nervous affections. The French employ it very extensively as a nervine.

In conjunction with other appropriate remedies, it not only renders the mixture more palatable, but frequently also increases the therapeutic power of the combination.

I would propose the following formula for making the syrup, which, I think, will give satisfaction, possessing the merit of simplicity and yielding a most excellent preparation:

℞. Orange flower water (filtered), one pint.

White sugar, in coarse powder, thirty troy-ounces.

To the orange flower in a half-gallon bottle add the sugar, and shake frequently until dissolved, and strain through muslin. If it is desired to finish the syrup quickly, the solution of the sugar may be facilitated by placing the bottle, tightly corked, in warm water, not too hot, and agitating it occasionally. But heat should not be employed when it can be avoided. In warm weather it is never necessary.

When the demand for the syrup is limited, I would advise that what is not required for immediate use be at once transferred to small bottles, filled to the cork, sealed and kept in a cool dark place, which I have no doubt will insure the preservation of the aroma and flavor of the syrup for a long time. Without this precaution, however, the syrup will keep well. A sample in the possession of the writer, made about the 15th of last September, is now apparently in excellent condition, showing no evidence of change, and with its odor and flavor preserved in great perfection; while a very carefully prepared sample, made in strict conformity to the officinal formula, began to change and loose its odor in about two months after it was made; both samples being kept together on the upper shelf in his store-room.

The yield of the above formula is about thirty-six fluidounces, and consequently contains sixteen thirty-sixths or nearly one-half of its bulk of orange flower water, while that of the officinal formula contains but five fluidounces of the latter in forty-four fluidounces of the syrup, or about one-ninth of its measure.

To produce a nicely flavored syrup it is *absolutely* necessary

that great care and scrutiny be exercised in selecting for the purpose fresh and well-preserved orange flower water of the most excellent quality. The best imported into this market is known as "Chiris'," yet I have found this very variable in quality. Different samples of the same importation will sometimes vary very much; the quality of one sample in richness and delicacy of odor and flavor being far superior to that of another, notwithstanding the same care having been bestowed in the preservation of each. I am unable to account for this disparity in quality, nor have I met with any of the importers of or dealers in the article, with whom I have conversed upon the subject, who could give me a satisfactory explanation of the matter. I presume, however, that it is due, in a great measure, to greater care and skill having been employed in its manufacture, or that the finer qualities having been distilled from a finer quality of orange flowers. Hence the importance of much care in selecting the article, as an inferior quality of orange flower water is entirely worthless for any purpose.

The proper *medium* dose of this syrup, when employed for its therapeutic effects, would be for an adult about a tablespoonful, mixed with a little water to relieve its cloying taste. The dose directed in the *last* edition of the United States Dispensatory for the officinal syrup is a fluidrachm, which certainly is a *feeble potion*, especially when the dose of *orange flower water* is a tablespoonful.

Philadelphia, March, 1870.

PILLS AND EXCIPIENTS FOR THEM.

By Thomas S. Wiegand.

The subject of excipients for pill masses has been frequently referred to by the most careful pharmaceutists as one of the most difficult of the many that the dispenser has to meet with in the daily routine of his duty; and as the case has generally to be decided at once there is but little time to consult authorities, if indeed anything applicable to the instance is to be found in any systematic treatise.

It was partly in consideration of these facts and at the re-

quest of some medical friends that the few hints here appended are offered to your readers to assist them in this matter.

An excipient should be harmless and tenacious during the ordinary changes of heat and moisture; should remain soluble, even when mixed with those substances likely to harden it, and withal be therapeutically, as well as pharmaceutically, compatible with the remedies it is associated with.

In view of these requirements, gums arabic and tragacanth are both obnoxious to criticism, although they can and are used successfully to make the masses cohere, in a short time they become so hard that they render many pills almost insoluble, and whenever a pill mass can be formed without the use of either of them they should not be employed.

One of the most desirable excipients for substances which are not liable to be deoxidized or reduced, is made by evaporating clear honey to about one-half its bulk. When thus treated honey is very tenacious, and yet is very readily miscible with the juices of the stomach; when used in the proportion of one grain to three of sulphate of quinine the mass is sufficiently firm for making pills which, without any acid, are smaller than those made in accordance with directions of the pharmacopœia.

Ferrum redactum is very advantageously made with this excipient, great care being exercised lest any excess be used, as the great density of mass renders the pills very liable to flatten before becoming dry enough to dispense. The subnitrate and subcarbonate of bismuth are also very elegantly made with this material, the same care being taken to avoid any excess and for the same reason.

Another excipient of this kind, and which remains soluble for almost any length of time, is glycerin, in which one-twenty-fifth part of its weight of finely dusted white tragacanth gum has been mixed; this material was first suggested to me by Dr. J. C. Leamy of Baltimore, Md. After the tragacanth has been added it should stand for twenty-four hours, when it will be fit for use. Pills made with this are quite small, and it is well adapted to such masses as contain dessicated salts such as dried sulphate of iron.

Another excipient which admits of a wide range of applications is extract of gentian; its greatest adaptation being in

those cases where the materials directed are liable to be deoxidized or reduced by combination with saccharine matters; calomel is a most noticeable instance. Nitrate of silver is also a substance that is very advantageously made with this material; previous to being made into a mass it should be mixed with some inert powder, to prevent a too rapid cauterizing action in the stomach. The oxalate of cerium is well formed into mass by this extract. Wax has been recommended, but it is to be eschewed, as it is so nearly unaffected by the action of the juices of the stomach.

Pertinent to this subject of pill masses, excipients, &c., is the propriety of constructing all the formulæ for pills in the pharmacopæia of such quantities that the resulting pill masses should be divided into those numbers which are multiples of twelve. This subject was very carefully and ably argued by Mr. Alfred B. Taylor, in a paper published in the March number of the American Journal of Pharmacy for 1860. The advantages of such an arrangement are obvious to those who make the pills, and all should accede to any change which is harmless, if by doing so the formulæ are rendered more easy of execution. All the pill machines in use by apothecaries are designed to enable them to make twelve, eighteen or twenty-four pills, so that to increase or diminish any officinal formula based upon such a scale merely requires the continued duplication or binary divisions of such quantities.

An examination of the nineteen formulas shows that there are six different series which cannot be reduced to each other by simple duplication or halving.

The change proposed almost precludes the chance of error, and therefore is so much the more desirable.

Philada., March, 1870.

ON SUPPOSITORIES.

By Saml. P. Wright.

An Inaugural Essay Presented to the Philadelphia College of Pharmacy.

Suppositories have been in use for many centuries. Hippocrates, who lived between the years 460 and 357, B. C., used cathartic suppositories, which were composed of honey, soap,

salt, nitre, and powdered colocynth. Until late years suppositories were generally used for the treatment of uterine affections, being but seldom used by introduction into the rectum, and were, consequently, made of a large size—one and a half or two inches in length—and of a weight as high as two drachms. They were made into different shapes, sometimes being spherical and often oval, or oblong, in form. At present they are mostly used by introduction into the rectum, and are usually made of a conical shape. The most convenient sizes are fifteen and thirty grains, the former for children and the latter for adults.* They have been quite extensively used in France for many years; but in this country are comparatively new vehicles for medicaments. They undoubtedly afford a very good mode of administration, especially when the stomach is weak and refuses to retain such remedies as the practitioner may be desirous of employing. Three times as much of a medicine may, in general, be given *per anum* as by the mouth, with a few exceptions, of which are the topical irritants, such as podophyllin, etc.

In England the moulds in general use are those which open. They are made of various shapes and sizes, some having the cavities arranged in a circle, others in one, two, or three straight lines.

One objection to these is that many of them do not close tightly enough to exclude water. Some prefer these, thinking it easier to remove the suppositories from them than any others; but occasionally one or more of the suppositories will adhere to them so tenaciously that they will split upon opening the moulds. To prevent this there have been a number of substances recommended, among which are glycerin and some of the fixed oils.

The moulds, which are made of block tin, or other metals, each being cast separately, and of such shape that they may be placed in a perforated sheet of tin, which is fitted to a suitable tray for cooling the suppositories, are much preferable to those before mentioned. The suppositories may be very readily re-

* When intended for the male urethra they are cylindrical, about two inches long, and 3-16 diameter, cast in a glass tube, cooled, and removed after instantaneous warming by a wooden piston.—Ed. Am. J. Pharm.

moved from these if the inner surface is dusted with lycopodium, or some similar powder, as recommended by Mr. J. B. Moore (Amer. Jour. of Pharm. 3, xvi. 223).

Paper moulds have almost entirely gone out of use.

In the British Pharmacopœia, of 1864, there were two recipes given for suppositories. These formulæ directed the ingredients to be mixed by the aid of heat, and after they cool sufficiently, to be divided into equal parts, which were to be made into cones. These were to be dipped into a mixture of eight parts of lard and one of white wax, melted together, which gave the exterior portion a greater degree of firmness than the interior. In these formulæ there was no butter of cacao, but in the present edition the excipients are mixtures of benzoated lard, white wax, and butter of cacao.

Of all the excipients that have been used for suppositories, the butter of cacao is decidedly the best. It has been used in France for this purpose for more than half a century, and is now in general use in the United States.

Some use a little wax with it for convenience in dispensing in warm weather, which is not necessary in *this* climate, unless the suppositories contain a large proportion of liquid ingredients.

Many practitioners object to the admixture of wax, because the temperature of the body is insufficient to overcome its high fusing point. Those which are made without the admixture of wax, should be thoroughly chilled, and the customer instructed to carry them properly, and to keep them in a cool place. If one is placed in cold water a few minutes before required for use it will be quite firm.

I have found that the best method for dispensing suppositories with dispatch, is to first place the butter of cacao where it will slowly melt, reserving a portion—the quantity to be governed by the amount of the medicinal ingredients to be incorporated—with which the medicaments are to be triturated. This well-mixed mass should be thoroughly incorporated by constant stirring with the melted butter of cacao, which, at the time of admixture, should not be much above 100° Fahr., especially if an extract is present, because some of these will separate, even at a lower temperature.

The aqueous extract of opium is employed more than any other, so I will relate some of my experience with it.

When it is *perfectly* dry it may be reduced to a *very* fine powder, and then incorporated with the butter of cacao. If an attempt is made to powder it when not perfectly dry, small particles will adhere to the mortar and pestle, and it cannot be powdered as fine as it should be. When the extract is in this condition, after it has been powdered as finely as possible, it should be mixed with a small quantity of water (one drop to about fifteen grains is sufficient), and then made into a smooth pilular mass. When the extract is not hard, yet too tenacious to mix with the butter of cacao, it may be rendered quite soft by kneading between the fingers, imparting sufficient moisture by breathing upon it. When the extract is soft, it should first be mixed with about half its weight of butter of cacao. When it doesn't mix readily in the mortar, it may be very thoroughly incorporated by kneading between the fingers for a few moments, when it may be easily mixed with another portion. It would be very convenient, and often save time, by keeping a mixture composed of equal parts of the extract and butter of cacao.

All the extracts which I have had occasion to make into suppositories may be manipulated as above. It has been recommended that the extracts be reduced to a creamy consistence; but this would require a large amount of liquid, which is objectionable.

PUMPKIN SEEDS.—PEPO, U.S.P.

By Benton G. Dosch.

(From an Inaugural Essay presented to the Philada. College of Pharm., 1870.)

The pumpkin is a very common and familiar plant, cultivated in most parts of the world. It belongs to the natural order of Cucurbitaceæ: variety Pepo. It attains to the greatest perfection in low and moist situations, often attaining an enormous size, and is the largest of its natural order.

Some kinds are highly esteemed and extensively used as an article of diet, for pastry, &c. The farmers cultivate it for the purpose of feeding cattle, for which it is highly nutritious food. For this purpose, however, they are usually deprived of the

seeds, as the latter are said to diminish the papillary secretions. Of late years it has deservedly engaged the attention of numerous practitioners, as a remedy in tænia. As it has not yet been thoroughly examined, I hereby desire to contribute to the investigations already made, and I think that my experiments will conclusively show to what it owes its virtues as a therapeutic agent.

The seeds are the officinal portion, and to these my inquiries have been alone directed, although the pulp has been used with asserted benefit for the above complaint.

Experiment 1st. One hundred grains of the seeds yielded twenty-five grains of external coating, and seventy-five grains of an oily kernel.

Experiment 2d. Sixteen troy-ounces were treated with one pound of ether by percolation. The percolate thus obtained yielded about five ounces of a viscid fixed oil of an olive green color, changing to a yellowish color on standing. Its taste resembles that of olive oil with a slight odor of the seeds, insoluble in alcohol, soluble in chloroform. I next treated the drug remaining in the percolator with 95° alcohol, exhausting it thoroughly. The percolate was of a pea-green color, and when rubbed upon the hands developed the odor of the seeds in a strong degree. From this I recovered the alcohol by distillation, reducing the product to the average strength of fluid extracts. The distillate gave no signs of anything but pure alcohol, which leads me to suppose that the odorous principle is not volatile.

I next treated four troy-ounces of the seeds with alcohol by maceration, filtered the resulting tincture, and added to it an equal weight of water, which threw down a light precipitate. The latter I allowed to subside and collected it upon a paper filter, dissolved the product in a fresh portion of alcohol, filtered and evaporated, which yielded a substance of a soft resinous appearance, incapable of becoming hard, but rather possessing the properties of an oleoresin. It possessed in a strong degree the odor of the seeds, and was to the taste aromatic, leaving a slight sense of acrimony upon the palate. It is soluble in ether and chloroform, but alcohol dissolves it with greater readiness. I believe it is the principle to which the drug owes its efficacy, and propose for its name Cu-

curbitin, naming it after its natural order, as other species of Cucurbitaceæ have been used for anthelmintic purposes, and probably their remedial properties are due to the same active principle.

With the preparations before mentioned, Dr. John C. Hall, of the Philadelphia Hospital, made the following therapeutical experiments. He, however, commenced with an emulsion of four ounces of the seeds in a pint mixture. This was administered to the patient after fasting for twenty-four hours, and followed in six hours by a dose of castor oil. The patient passed a few fragments of the worm. He next administered one ounce of the oil, and followed again in six hours with two fluid-ounces of castor oil, with little effect upon the disease. This dose was repeated under similar circumstances with the same unsatisfactory result. He next used four fluid-ounces of the fluid extract given in tablespoonful doses, with the happy effect of expelling the greater part of the worm.

The latter contributes to verify the statements made in the Amer. Jour. Pharm., May, 1869, by Mr. Chas. Hand, in which alcohol is given place to, as the best solvent for the active principle. But I think that a preparation less alcoholic would be more desirable for administration. I have found that glycerin is a good solvent of the active principle, and I propose it as a menstruum for a fluid extract, combining it in the first instance with alcohol, and lastly to add a small quantity of oil of bitter almonds as a flavoring ingredient.

Take of Pumpkin seeds, sixteen troy-ounces;
Glycerin, twelve troy-ounces;
Alcohol, a sufficient quantity;
Oil of bitter almonds, ten drops.

Bruise the seeds with an equal bulk of dry sand until reduced to a coarse powder. Having mixed the glycerin with a pint of alcohol, moisten the powder with eight fluid-ounces of the mixture, then transfer the powder to a percolator and pour on the remainder of the menstruum. When this has passed, continue the process with alcohol until the percolate measures three pints. Introduce the product into a suitable still and recover two pints of the alcohol. Filter the remainder of the liquid, and add sufficient alcohol to it to bring the fluid extract to the measure of a

pint; lastly add the oil of bitter almonds and agitate until it is thoroughly incorporated. The dose may be from ʒii to ℥ss, as the physician may direct.

These experiments further show that the pumpkin seed is a valuable remedy if administered in the proper manner, and as it is a drug that can be easily and cheaply obtained of good quality, which is not the case with many other remedies of its class, it cannot be too highly valued as a therapeutic agent.

NOTE ON THE PREPARATION OF SYRUP OF SENEGA.

To the Editor of the American Journal of Pharmacy:

Dear Sir,—Many readers of your extensively circulated journal have no doubt never been fully satisfied with "Syrupus Senega," as made according to our Pharmacopœia; the product, though therapeutically efficient, is an eyesore to all who take pride in elegant preparations.

The subject may therefore be worth a short notice, and I would therefore desire to lay before your readers a process I have followed for some time with the best results.

The medicinal virtues of senega reside chiefly in a saponaceous principle,—polygalic acid,—soluble in water, cold or hot, less so in alcohol, which dissolves it when hot, but deposits it upon cooling. With polygalic acid are associated gum, resin, earthy salts, and other inert matter.

Diluted alcohol has been employed as a menstruum to prevent the solution of these useless substances, which would to some extent be taken up by water. Alcohol, on the other hand, extracts the resin, which, when the tincture is evaporated, is precipitated, and the remaining aqueous solution cannot be made perfectly clear by any amount of filtration.

One of your correspondents suggested a process, which consisted principally of exhausting the drug with water, evaporating the infusion to a small bulk, precipitating gum, etc., by alcohol, again evaporating and filtering if necessary, adding sufficient water, and dissolving the sugar. This is a complicated process, subjects the solution to the long continued action of heat, renders several filtrations necessary (and with senega these are very

tedious, more so when the pores of the filter are closed with an abundant precipitate of gum, etc.), and lastly it requires the use of alcohol; this, though cheaper now, is yet worth saving.

Of the merits of the following process, which, in my humble judgment, leaves nothing to desire, I will let your readers judge.

Take of Senega, in moderately fine powder, eight troy-ounces. Moisten this with water, pack into a percolator, and pour on as much water as it will absorb. Close lower orifice of percolator and allow it to macerate for twenty-four hours, then percolate until one pint of infusion has passed. Raise this to the boiling point, filter when cold, pass enough water through the filter to make up the pint, and in this dissolve 24 troy-ounces (or in summer 26) of sugar, and strain.

If the percolation has been carefully conducted, the drug will have been exhausted; if found otherwise, the percolation may be continued to exhaustion and the resulting infusion evaporated. By boiling for a few moments the albuminous principles coagulate, and the filtered solution and syrup are perfectly and permanently clear. The small amount of gum, etc., held in solution can hardly be objectionable; it does not induce fermentation, and the syrup as made above will be found as stable as any. I have kept it on a high shelf in a heated room for over a year, and never observed signs of change or decomposition.

Respectfully yours, A. A. K.

Baltimore, Md., March 5, 1870.

ON THE ACTIVE PRINCIPLE OF CATALPA BIGNONOIDES.

By Eugene A. Rau.

(From an Inaugural Essay presented to the Philadelphia College of Pharmacy.)

This well-known ornamental tree is the largest representative in the Northern United States of the natural order Bignoniaceæ, whither it has strayed from the Southern States, and become fully naturalized. The ample size of its cordate leaves would seem to recommend the Catalpa as a shade tree, but owing to their being rather sparsely disposed and early deciduous, together with the usual uncouth growth of the tree, it is but seldom cultivated for ornament. In the months of June and July the tree

presents a beautiful appearance, with its large and handsome pyramidal panicles of flowers peering through the bright green foliage. The flowers, too, do not appear the less handsome upon close examination, being of a pure white, mottled with rich purple and orange-yellow spots in the throat, and possessing a very pleasant fragrance.

After the early frosts of autumn have stripped the tree of its leaves there remain suspended the cylindrical pods, generally a foot in length; these split transversely to the partition, which extends the full length of the pod. The seeds are numerous, thin, flat and enclosed in a delicate silky envelope, prolonged at both ends into finely fringed wings.

As to the medicinal activity of the various parts of Catalpa there seems to exist a variety of contradictory opinions; while many assert the poisonous nature of the bark, others give to it valuable antiperiodic properties. A decoction of the seeds, too, has been recommended in cases of asthma, although their perfect tastelessness does not seem to indicate any medicinal activity. Owing to the latter fact chiefly, the following investigations were confined to the bark, and, moreover, to perfectly new and carefully dried specimens. The outer, corky layer was rejected, and the remaining part or liber retained for examination; this was of a cream color, and possessed, before drying, a rank odor and a nauseous intensely bitter taste. It seemed composed of several superimposed sections of a pithy nature, separated by tough fibrous layers, which rendered the comminution of the bark very difficult. * * * * * * * *

Exp. III. An alcoholic tincture of two and a half pounds of powdered bark was made with stronger alcohol. The resulting tincture was of a deep amber color and possessed the peculiar odor and taste of the bark.

With reagents the following results were obtained: with salts of the Fe_2O_3 a greenish black coloration was produced, showing the presence of tannin.

By the addition of alkalies a red coloration was produced, and with BaCl a light yellow flocculent precipitate resulted.

The alcoholic tincture was then concentrated and evaporated to the consistence of a soft extract. This was then freely washed

with ether, to remove all soluble in that menstruum, repeating the washings with fresh portions until it ceased to be colored.

The ethereal solution was evaporated to an extract, the color of which was a uniform rather dark brown, the taste excessively disagreeable and nauseating. It was acid to litmus and evidently insoluble in water, with which it formed a turbid mixture.

The ethereal extract was redissolved in a mixture of equal parts of alcohol and water, and boiled with freshly precipitated hydrated oxide of lead. Having separated the liquid it was found to be of a straw color, very bitter taste, neutral to test paper and unaffected either by alkalies or iodohydrargyrate of potassium.

Upon evaporating the liquid by means of a water-bath to dryness, the resulting extract was of a yellow color, bitter, insoluble in water, but did not possess the peculiar nauseous taste of the bark.

The PbO was first washed with a small quantity of dilute alcohol and then boiled with stronger alcohol. After filtration, and during spontaneous evaporation, there took place a separation of white quadrangular micaceous scales. These crystals, upon further examination, were found to be insoluble in water or dilute alcohol; sparingly soluble in cold alcohol, but very soluble in ether and chloroform. They were insoluble also in dilute alkaline solutions and dilute acids, and were neutral to test paper, thus seeming to indicate their being a neutral principle. A few of the crystals heated upon platinum foil melted and inflamed, the remaining mass of carbon finally also incinerating, thus proving them to be essentially an organic product. The crystals possessed an intensely nauseous and bitter taste, resembling that of the bark. Upon further evaporation of the mother-liquor no more crystals could be obtained, but a dark resin separated, which was readily inflammable, like the crystals, and possessed their taste.

That portion of the original alcoholic extract which remained after having been washed with ether, was found to be comparatively tasteless, with Trommer's test gave evidence of the existence of glucose, and with sesqui-salts of iron showed the presence of tannin. A tasteless resin was also separated which was insoluble both in water and ether.

SULPHATE OF LIME AN IMPURITY IN TINCTURE OF CHLORIDE OF IRON.

By Dr. Robert Battey.

To the Editor of the American Journal of Pharmacy.

Dear Sir,—In the March number of your Journal J. C. Wharton comments upon certain "silky white needles, of a lustre something like asbestos," which he has observed to slowly crystallize down from muriated tincture of iron, and suggests the opinion that it is dissolved off from the glass vessel used, and also the inquiry if it be not silicate of lime.

I have several times observed the same long, slender and delicate needles, in color and lustre just such as he describes, and have likewise observed the following facts:

1st. It is only occasionally that my tincture of iron deposits these crystals, whilst it always deposits more or less of the yellowish precipitate he mentions.

2d. A given sample of muriatic acid, which has been used when the crystals have formed, will uniformly cause their deposition.

3d. That the crystals themselves, when carefully washed and tested both in the wet way and before the blow-pipe, give the characteristic reactions of sulphate of lime.

My opinion is that these crystals are only a trace of sulphate of lime, introduced as an impurity in some samples of commercial muriatic acid, and have no necessary connection with the yellowish deposit.

Rome, Ga., 21st March, 1870.

PHARMACEUTICAL NOTICES.

Editor of the American Jour. Pharmacy:

Dear Sir,—Tne following may perhaps interest some of the readers of the Journal:

Aqua Chlorinii Extemp.

Put in a bottle potass. chlorat. 40 grains; add muriatic acid, C. P., ½ oz. *troy*. When the bottle begins to get filled with chlorine-vapors add dist. water one fluid-ounce. Stopper the

bottle, and, when the crystals have dissolved, add dist. water up to one pint.

This chlorine water (suggested in Constatt Jahres. 1845, p. 91,) will of course contain chloride of potassium, which will not be of any consequence, = 24 grains KCl in one pint; nor can twelve grains, at most, of acid do any harm in one pint. I would rather dispense chlorine water with a little mur. acid, KCl, but *which does contain* free chlorine, than a water which, made according to U. S. P. once upon a time *did* contain chlorine, but after a few weeks is not much stronger than so much diluted muriatic acid.

As to the above, I make every fourteen days four ounces fresh, and throw away the old.

Excipient for Pills.

Dr. Jenkins recommended once, in the Amer. Jour. Ph., glycerin as an excipient for quinine pills, but said it was not quite the thing. Let me recommend the use of plasma. The use of it originated with a good many in Europe and here in the United States. I began to use it in 1862, and was astonished that nobody knew anything about it here in the Eastern States. When in California in 1867, I found it in general use in San Francisco, Sacramento, &c., and learned there that plasma is the best excipient for pills that have to be silvered; the pills get so *sticky that they need no moistening at all.*

The same caution applies to plasma as to glycerin, viz.: not to take too much, the glycerin oozes out. Of course plasma is not the best excipient for *all* pills. Pil. cathart. comp. U. S. P., for instance; the only proper vehicle here is *water*. Plasma makes a plastic pill mass with camphor pulv.

Fr. Mohr recommends to keep substances which easily attract moisture over unslaked lime or chloride of calcium.* From time to time the lime has to be renewed. Would not powdered ergot, for instance, kept in this way, be reliable to the last grain?

Evaporation to dryness.

When a preparation has to be heated until it does not lose

* Put the lime in a box (tin box) with perforated lid, and put that box in the drawer, saltmouth bottle, or other receptable.

more in weight (till all moisture is driven off), it is customary to put it on the scales from time to time, to ascertain if the requisite point has been reached. This is very troublesome, and Prof. Wittstein proposes somewhere to dispense altogether with the repeated weighings by covering the capsule, crucible (or what else implement is used) from time to time with a dry glass plate. The glass, being always a good deal cooler than the capsule, etc., condenses the vapors of moisture to quite large drops. As long as the glass becomes in the least bedewed all the moisture has not been driven away. When the glass remains dry and clean then you may put the capsule, etc., on the scales, and you will always find that the stable point has been reached.

Frothy Syrups.

Now approaches the time when soda water flourishes, and the following may be of use to some: As a good froth is desirable, hitherto the addition of a little gum arabic has been recommended; aside from the trouble of dissolving it, it does not produce a consistent foam with acid syrups (syr. lemon for instance.) I learnt in California the use of white of eggs. One white shaken with one and a half to two gallons *cold* syrup is sufficient; it produces a persistent foam and imparts, besides (according to my palate at least), a rich, creamy flavor.

Philada., April 5th. H. M. W.

ON SULPHOCARBOLIC ACID AND THE SULPHOCARBOLATES.

By T. Omar Guy.

(Extracted from an Inaugural Essay presented to the Philadelphia College of Pharmacy.)

These chemical combinations have quite recently come before the medical world as new therapeutical agents, but have not been thoroughly investigated. There having been no satisfactory process given for their manufacture the subject was presented to me several months ago for investigation; since which time I have experimented with various combinations, and find the following to give the most satisfactory results:

Sulphocarbolic Acid.

This is first formed by combining, by aid of heat, sulphuric

and carbolic acids, in the proportion of 49 parts by weight of the former to 94 parts by weight of the latter, or one equivalent of each according to the old nomenclature.

The mixture is put into a glass flask with a narrow top, into which is inserted a thermometer, and covered over by means of a paper diaphragm, in order to keep the fumes from escaping. It is then placed on a sand-bath and heat gradually applied until the acid is raised to the temperature of 290° F., and kept at this point for ten or fifteen minutes, and then allowed to gradually cool.

At first this forms a thick syrupy liquid of a rich wine color, which, in time, passes into a crystalline mass, composed of small rhomboidal crystals, having a reddish-brown appearance. These again become liquid at or about 80° F.

When the two acids are first mixed, heat is evolved, the temperature being raised to 190 F. Fumes are given off which are again condensed on the sides of the vessel. These have an odor similar to carbolic acid, though differing in some respects.

Sulpho-carbolic acid reddens litmus; with the sesquichloride of iron, also, with the solution of the pernitrate of iron, it produces a beautiful purple color, which fades when exposed to the sun light for a short time. With chloride of barium, nitrate of baryta, and the acetate of lead, it produces a slight opalescence, which is probably owing to a little free sulphuric acid.

Its taste is at first strongly acid, leaving a slight empyreumatic taste upon the tongue. It also has a strong empyreumatic odor, resembling, to some extent, carbolic acid. Its sp. gr. is 1·288; boils at 540° F., and is decomposed at 560° F. into a black, shiny, amorphous mass, having lost all of its odor; soluble in water and alcohol, and gives a decided reaction with the soluble barium and lead salts.

The acid is soluble in any proportion of water, alcohol and ether. It dissolves iodine, and the solution will combine with water without throwing the iodine out of solution.

When heated to 400° F. it becomes of a bright red color, and when cooled forms an almost semi-solid mass. If nitric acid is added to a portion of sulpho-carbolic acid, it is immediately decomposed with violence, nitrophenic acid being formed—a black

oily liquid giving off a peculiarly disagreeable odor, entirely different from that of carbolic acid.

In forming the sulphocarbolic acid I used the chemically-pure sulphuric acid, sp. gr. 1·823, and Calvert's No. 2 carbolic acid.

The interchange of elements which takes place when sulphocarbolic acid is formed may be represented by the following reactions: one equivalent of carbolic acid = $C_{12}H_6O_2 = 94$; one equivalent of sulphuric acid = $SO_3HO = 49$; then $C_{12}H_6O_2 + SO_3HO = C_{12}H_6O_2SO_3HO = C_{12}H_5O, SO_3, 2HO$, which might be considered sulphophenic acid, or a hydrated sulphate of the oxide of phenyl.

Sulphocarbolic acid has been experimented with in regard to its disinfectant properties, and found to be much more efficient than carbolic acid alone.*

With salifiable bases it combines and forms salts, which have been called sulphocarbolates. These have a faint odor of carbolic acid, and are supposed to have its therapeutical properties combined with its respective bases, without its causticity, rendering it suitable for internal administration.

In heating the acid, great care should be used not to heat it too suddenly. There is apt to form at the bottom of the vessel a black liquid, caused by too great a temperature, resulting in the decomposition of the acid.

Sulphocarbolate of Soda.

This salt is at present considered of the most important of the series. It may be produced by taking one volume of sulphocarbolic acid, adding six volumes of water, and completely saturating with carbonate of soda in crystals. The solution is then filtered and evaporated slowly over a sand or water bath until a slight pellicle is formed, when it is set aside to crystallize. When the crystals are all formed, the mother-water may be still further evaporated, and a new crop of crystals obtained.

Should they contain coloring matter, or the crystals not be well formed, a re-solution and crystallization will produce a beautiful salt, free from coloring matter and of well defined rhomboidal prisms, soluble in five parts of cold water at 60° F. and in two-

* Vide Pharmacist, Chicago, Sept. 1869.

thirds its weight of boiling water. Soluble to a slight extent in alcohol, but insoluble in ether.

Sulphocarbolate of soda is a nearly colorless salt, possessing a slight pinkish tinge. It has a somewhat saline, bitterish taste, and a faint odor of carbolic acid; neutral to test paper; produces no precipitate with chloride of barium, nitrate of baryta, or the acetate of lead. With the sesquichloride of iron and the liquor ferri nitratis it produces a beautiful purple color, characteristic of the sulphocarbolic acid.

The crystals should be well dried by exposing them to the air in a warm place on filtering or porous paper.

The reactions which take place when the salt is formed may be represented by the following equation: $NaO,CO2 + C_{12}H_5O, SO_3\ 2HO = NaO,C_{12}H_5OSO_3HO + CO_2$.

In heating this salt to a high degree it loses thirty per cent. of its weight, and falls into a grayish white powder, giving a white precipitate with chloride of barium, nitrate of baryta and acetate of lead; with the sesquichloride of iron and the solution of ternitrate of iron it produces a deep reddish color. If the heat is continued to redness it takes fire, and burns without flame. Nitric acid added to a solution of the salt gradually acquires a reddish-brown color.

The therapeutical properties of sulphocarbolate of soda have not been thoroughly investigated. It has been used in phthisis with marked success; also in zymotic diseases with favorable results. It has been given in doses ranging from ten to sixty grains.*

Several physicians of this city have used the sulphocarbolate of soda in the treatment of disease. Among the number the following have been reported. One case was that of Anna E——, having suffered from ozena for several years; the sulphocarbolate of soda was used, varying the strength from two to eight grains to the fluid-ounce of water. It was used twice daily, with Thudicums nasary douche, with the most flattering success.

It was also used as a topical application in a case of syphilitic sore mouth with good results. In this case the strength of the solution used was ʒi to f℥iv of water.†

* London Practitioner, July, 1869. † Cases reported by Dr. Collins.

As a dressing for fetid leg ulcers, the solution of the sulphocarbolates possesses one advantage over the carbolic acid; the acid in oil or paste is at first generally too stimulating, but soon volatilizes, leaving the oil or paste inert. The sulphocarbolates being less volatile, but at the same time possessing the antiseptic qualities, a more uniform application is obtained.

This salt was used in several cases of severe tonsillar ulceration, which all rapidly recovered without the occurrence of suppuration.

It was also employed in several severe cases of scarlet fever, every case of which recovered in a less period of time than under any treatment which had previously been employed in similar cases.*

[The author also treats of the salts of potassa, zinc, lime, baryta, magnesia and ammonia, but our limited space precludes the publication of the whole paper, especially as the salts have been noticed in the last number. EDITOR AMER. JOUR. PHARM.]

TRICHINA SPIRALIS.

By EDMUND BOCKING.

A case of *Trichina spiralis* occurring here is interesting as eliciting some new points in connection with this not well understood parasite.

A German, named Burdatt, some two weeks since was taken at night with an obstinate diarrhœa, which continued and was accompanied by muscular languor and other symptoms of trichinosis. His wife was also affected the same way. Inquiry now elicited the fact that on the evening of the night of the attack the family had partaken of some raw ham for supper. The attending physician, Dr. H. J. Wiesil, suspecting trichinosis, immediately brought some of the meat to me for microscopic examination. Apparently the ham presented no objectionable features, being rather a piece that would be selected for sweetness and nice appearance than rejected. But under the microscope it became almost a literal mass of parasites—myriads and myriads of the trichina free from their cysts, as well as incysted,

* Vide London Practitioner, July, 1869.

and in all stages of development, being revealed to the view. A careful calculation, based on a mounted section, would estimate the number of parasites to the square inch of meat at 250,000. Some eight or ten days after the meat was eaten a little daughter of the persons alluded to was attacked by symptoms of trichinosis, and it is feared will not recover. In the case of the man and wife they show signs of improvement. One remarkable point in connection with this case is the rapid development of the symptoms of trichinosis; but six or eight hours elapsed from the ingestion of the parasitical meat until the disease exhibited itself. I shall make further investigations of the meat, and any new facts worthy of note, as well as any new developments in the several cases of trichinosis, I will communicate.

In conclusion, I will remark that I have in my possession a quantity of the meat, rich in trichina, that I will exchange with microscopists for other specimens.

Wheeling, W. Va., April 7, 1870.

NOTE ON COD-LIVER OIL AND OTHER PRODUCTS FROM PORTSMOUTH, N. H.

By the Editor.

Cod-liver oil as a remedial agent continues to retain its value in the opinion of the medical profession, and any information in regard to it is interesting to pharmaceutists and physicians. Having recently had occasion to converse with Mr. T. E. O. Marvin, engaged in its manufacture under circumstances favorable to its careful production, we took occasion to elicit some facts, and since to obtain some of the by-products which may become useful in medicine and agriculture, which consist of the pulverulent oily matter, constituting chiefly the solid tissues of the cod-livers, in the form left by the press, and of the emulsive aqueous liquid separated from the same along with the oil by pressure, and which retains all the matters soluble in water that the livers contain.

The first condition necessary to the production of cod-liver oil in its unaltered condition is a sufficient supply of the livers in a fresh state. The position of the harbor of Portsmouth, N. H.,

at the mouth of the Piscataqua River, in relation to the ocean, is so convenient, and never freezes over, that it is well fitted for the fishing trade. There is a large fleet of fishing vessels here, and many more make the harbor a resort to get bait and sell their fish. The vessels run out about thirty miles for fish, starting as early as one o'clock, A.M., so as to reach the fishing grounds by daylight. Each vessel carries five small boats or dories, and eleven or twelve men, who go out, two in each dory, and set their trall lines, which are strung with baited hooks about a yard apart. One man rows the boat as fast as he can, while the other "pays out" the line from the tubs wherein it lays coiled with its two thousand hooks, each baited with a piece of fresh herring. When the trall is set it lays along the bottom of the sea like the Atlantic telegraph cable, a mile long, with small anchors at each end and buoys at intervals. As soon as the trall is all down the men row back to the first buoy, which they find by means of a small flag attached to an ever restless staff upheld by the buoy, and begin the task of "hauling in;" and as it is drawn up the fish are taken off and killed, and by the time the last buoy is reached the boat is usually loaded with noble codfish. Signal is now made to the schooner, which is hovering about the five boats as a hen about chickens. The boats are unladen alongside of the vessel, one by one, and then they steer away for home, to sell the fish and bait the hooks for next day. It is in this way that the supply of crude material is obtained. In reply to our query how they made their cod-liver oil, Mr. Martin says: "It can be told in a few words. First we get the livers when they are new and sweet, and subject them to a carefully graduated amount of steam heat, using only the oil-producing healthy livers, carefully washed and drained before their tissues are broken, so that none of the slime from the stomach or intestines goes into the kettle to make the oil taste or smell badly, as it certainly will if that precaution is not observed. The livers are now subjected to a steam heat which ruptures the oil cells, and causes the oil to rise to the surface, when it is skimmed off. The residue is then put in a powerful press, under strong pressure, and allowed to remain twelve hours, by which the mixed oily and watery parts are mainly separated. Power

is again applied, and more oil is obtained. The pulpy matter is then taken out almost dry. There is a yet finer pulpy matter, which oozes through the cloth of the press at the bottom and sides."

The practical details of "rendering" the oil, as it is called, involving the proper "cooking" of the livers, require some skill and experience, so as to separate it completely and yet not oxidize or expose it unnecessarily, so as to induce acridity or rancidity. That the oil should keep well it must be entirely freed from watery particles; to be but moderately heated, and the process should be executed promptly. Cod-liver oil rapidly absorbs oxygen from the air if exposed, and always should be enclosed in tight vessels immediately after its preparation. Messrs. Marvin Bros. & Bartlett bottle all the oil they make, and thus secure it from change. A sample of this oil received with the specimens was found to be sweet, and free from acridity or rancidity, with the odor and taste proper to this oil.

The pulpy matter left in the press cloth before alluded to, as we received it, was of a soft cheesey consistence, of a yellowish-salmon color, and possessing the odor of good cod-liver oil; but on keeping it with exposure to the air a few days, it acquires a rank, rancid odor of old cod-liver oil, becomes much darker in color, and contracts greatly from loss of moisture. It is strongly nitrogenous, and when distilled with caustic potassa and chloride of ammonium it yields propylamin among other products. So far its only use has been for agricultural purposes, as a manure.

The watery liquid pressed from the livers is presumed to be the material used in Paris to make the extract of cod-liver pills, of which some notice has been presented in the Journals. We had not time to examine this before it spoiled, no means having been taken to preserve it. It was our intention to examine it for iodine salts and for propylamin. If there be any merit in cod-liver oil due to iodine or bromine, it certainly ought to be found in this liquid,—yet it may be questioned whether these agents have anything to do with the therapeutic value of this popular remedy.

GLEANINGS FROM GERMAN JOURNALS.

By John M. Maisch.

A new delicate test for alkalies.—Bœttger recommends for this purpose an alcoholic solution of alkanin, with which Swedish filtering paper is impregnated; after drying, the paper is to be kept in well corked bottles. The minutest trace of ammonia turns the red color blue. If this red paper has been rendered blue by a very dilute solution of carbonate of soda, the red color will be restored by minute traces of free acids.—*Neues Jahrb. f. Pharm.*, 1869, Mai und Juni, 311.

Pure iodate of potassa, according to Stas, is readily obtained by heating a mixture of equal equivalents of chlorate of potassa and iodide of potassium in a retort placed in a sand bath, just to the temperature of the fusing chlorate. If the temperature is not carried too high, all the oxygen of the chlorate is transferred to the iodide. The chloride formed is extracted by cold water, and the residue is repeatedly crystallized from hot water. The iodate thus prepared never turns yellow on exposure, which is always the case when iodine is oxidized by chlorate of potassa. —*Ibid.*, 312, from *Journ. f. Pract. Chem.* 1869, 251.

To detect copper-arsenic colors, Puscher recommends the use of ammonia, which dissolves them with a blue color, and on evaporation leaves a dirty yellowish-green residue. If the blue solution leaves, on evaporation, a light blue residue, the material was dyed or colored with a blue or green copper compound, free from arsenic.—*Ibid.*, 314, from *Bayer. Gewerbeztg*, 1869, 35.

Adulteration of sulphuric acid.—J. Fleischer has met with oil of vitriol, manufactured in Stettin, in which sulphate of soda or of magnesia had been dissolved to increase its specific gravity.—*Ibid.*, 315, from *D. Indust. Zeit.* 1869, 208.

Preparation of Oxygen at ordinary temperature. By Prof. Bœttger.—A mixture of the hyperoxides of lead and barium may be kept for any length of time without being decomposed. If weak nitric acid (of about 9° B.) be added to it, pure oxygen is evolved perfectly free from ozone and antozone; the peroxide of hydrogen which is first generated, in its nascent state, is decomposed by the binoxide of lead, water and ordinary inactive

oxygen being given off.—*Ibid.*, July 28, from *Polytechn. Notizbl.* 1869, 252.

An improved apparatus for Chlorine Water is recommended by Rieckher. For the absorbing vessel he uses two Woulfe's bottles of equal capacity, which communicate with each other by a glass tube reaching from near the bottom of one to the same depth in the other; the last one from underneath the stopper communicates by means of another glass tube with a solution of soda. The first bottle is nearly filled with water, and the generated chlorine is conducted into it beneath the stopper; the pressure of the gas gradually displaces the water from the first into the second bottle, wherein the water is saturated. When the evolution of gas ceases, the rubber connection between the generator and first bottle is closed tightly, the generator and the soda solution are then removed, and the chlorine water slowly syphons back from the second into the first bottle. R. uses for 8 lbs. water 2 oz. bichromate of potassa, and 11 oz. crude muriatic acid. If towards the close of the process the first bottle is set into a refrigerating mixture of Glauber's salt and muriatic acid, crystals of hydrated chlorine are copiously obtained. The chlorine water with the suspended crystals is then filled into small bottles, the glass stopper is tied over with paraffin paper, and the bottles placed upside down in a vessel containing water, so that it reaches above the mouth of the bottle. Thus prepared and preserved, chlorine water will keep indefinitely.—*Ibid.*, 22—24.

Adulterated Saffron.—Saffron, containing some yellow filaments, was observed to be very full and plump, particularly the latter; it was found to have been treated with glucose to increase its weight. In another lot the pollen, always present to some extent, was found to have been imitated by the addition of 12 per cent. gypsum.—*Ibid.* 38, from *Deutsche Gewerbezeitung*, 1869, No. 22.

To prevent concussions in boiling liquids.—E. Winkelhofer generates in these liquids a gas by means of electricity.—*Zeitsch. f. Chemie*, 1869, 430, from *Ber. d. Chem. Gesellsch.*, Berlin, 1869, 191.

Muriatic Acid free from Arsenic.—A. Bettendorff observed that arsenious and arsenic acid is precipitated from a sufficiently concentrated muriatic acid by the addition of protochloride of tin; the precipitate contains from 96 to 98·6 per cent. arsenic. After this precipitate is removed, the muriatic acid may be distilled, and is then absolutely free from arsenic.—*Ibid.*, 492—494.

Reduction of Metallic Oxides by Hydrogen.—W. Müller has made a long series of experiments to ascertain the temperature at which the reduction to the metallic state takes place with different modifications of the same oxide. We extract only the following, as of particular importance to the pharmacist; the temperatures are in degrees C.: Oxide of iron, prepared by heating of the metal in the air, was reduced when moist at 293° (corrected temperature); when quite dry, at 305 to 339°; presence of nitrogen requires an elevated temperature; prepared from oxalate of iron and moist at 278°; obtained from the nitrate by ammonia, at 286°; previously heated to redness and scarcely soluble in muriatic acid, at the boiling point of mercury. Oxide of zinc is not reduced at the highest temperature attainable in glass tubes. Oxide of lead and red lead are reduced at 310 to 315°; peroxide of lead loses a portion of its oxygen at 310 to 315°. Red oxide of mercury is reduced at 230, the yellow at 127°. Oxide of silver at 70 to 78°; oxide of gold at 85°; oxide of platinum at ordinary temperature.

Auric chloride causes an explosion when heated to above 200° in hydrogen. Bichloride of platinum begins to be reduced at 85°. The chlorides of silver and lead were not affected.—*Ibid.*, 507, 508, from *Poggend. Ann.* 136, 51.

A peculiar balsam of Peru has been met with by Hager in the Berlin commerce, and is either a new variety or an excellent falsification. It is more limpid, lighter in weight, and of a somewhat different odor from the genuine. The mixture of equal volumes of concentrated sulphuric acid and balsam congeals at first in part only; one-third of the volume remains liquid, but congeals afterwards. Petroleum ether dissolves 26, and benzine afterwards 8, altogether 34 per cent. cinnamein; genuine bal-

sam yields 45 to 50 per cent. This portion was thinner and more yellowish than that obtained from the genuine; it could not be saponified with caustic potassa, and separated on standing, of a milky appearance, while the cinnamein from the genuine balsam separates scarcely turbid and often quite clear. On distillation, this balsam behaves like the genuine. Copaiba could not be found. Its specific gravity is 1·120 to 1·125, of the genuine 1·14 to 1·16. Hager regards it unfit for medicinal use.—*Zeitschr. d. Oesterr. Apoth. Ver.* 1869, 280, from *Ph. Cent. Halle*, ix, 46.

Adulteration of Cochineal.—Finely powdered sulphate of baryta is fixed upon cochineal by some glutinous material. Cochineal leaves 1½ per cent. ashes; in five samples of adulterated cochineal 8, 12, 16, 18 and 25 per cent. of the baryta salt was found.—*Ibid.*, 280, from *Der Apoth.* ix, No. 2.

Pomegranate bark.—Dr. C. Harz reiterates his statement, made some time ago, that the commercial bark of pomegranate root is in reality the bark of the trunk, occasionally intermixed with some root bark. The latter has larger cells, and at a short distance from the cambium the cells of the medullary rays are not elongated, but quadratic. The trunk bark, like that of the root, possesses anthelmintic properties.—*Ibid.*, 303, 304.

Coniferin is a new glucoside discovered by Th. Hartig in the cambial juice of *Abies excelsa*, *A. pectinata*, *Pinus strobus*, *Cembra*, and *Larix europæa*. The cambial juice is boiled, filtered and evaporated to one-fifth; soft acicular crystals are formed on cooling, which are separated by pressure from the saccharine mother liquor, and recrystallized from alcohol or water with animal charcoal.

The silky sharp-pointed crystals lose their water of crystallization at 100° C., fuse at 185, and congeal to a vitreous mass. They are sparingly soluble in cold water and strong alcohol, insoluble in ether. Their taste is faintly bitter. Sulphuric acid colors coniferin deep violet; the muriatic acid solution on heating separates a deep blue precipitate. Its composition is $C_{48}H_{32}O_{24} + 6\,HO$.—*Ibid.*, 326, from *Journ. f. Prakt. Chem.*, vol. 97.

ON THE BEHAVIOUR OF NARCEINA TO IODINE.

By W. Stein.

Dragendorff has described a reaction of narceina which with potassio-iodide of zinc yields hair-like crystals, which are gradually turned blue. According to Stein, this is due to narceina being colored blue by iodine. Solid narceina, like starch, becomes blue by free iodine. Winkler and Pelletier have already observed this reaction, but Winkler did not find it reliable in all cases. Much iodine turns narceina brown; but if water is now added and the excess of iodine removed by ammonia, the blue color appears. An excess of ammonia, like all substances which dissolve narceina, prevent the reaction. In solutions the alkaloid is recognized by adding potassio-iodide of zinc with a drop of solution of iodine, and agitating with ether. In this way 1 narceina in 2500 water may still be recognized. No other opium alkaloid has a similar behaviour.—*Zeitschr. f. Chemie*, 1869, from *Journ. f. prakt. Chem.*, cvi, 310.

ON THE TIME FOR COLLECTING THE LEAVES OF DIGITALIS.

By F. Schneider.

The pharmacopœias and text books direct to collect these leaves of the flowering plant. I had the leaves annually collected in the black forest during the latter part of May or beginning of June, requiring always some flowering stems. In appearance I had a beautiful drug, but rarely could I get a satisfactory reaction by tannin and ferrocyanide of potassium in the infusion. In 1869 a botanical friend, formerly apothecary, offered to supply digitalis, which he collected near the end of August and beginning of September, as he had done during his long pharmaceutical practice, from the rosulate leaves of plants, flowering the following year. The digitalis yielded a deeply colored infusion of strong odor and taste, and gave with tannin at once a dense precipitate, with ferrocyanide of potassium after 12 to 15 minutes a strong turbidity. The leaves should, therefore, be collected not in the flowering season, but late in summer.—*Pharm. Centr. Halle*, 1869, No. 49, from *Schweiz. Wochenschr. f. Ph.*

ON THE SOLUBILITY OF SOME CHEMICALS IN GLYCERIN.

By Klever.

The author found that 100 parts glycerin dissolve the annexed quantities of the following chemicals:

Acid. arseniosum,	20	Morph. acetas,	20
" arsenicum,	20	" murias,	20
" benzoicum,	10	Phosphorus,	0·20
" boracicum,	10	Plumbi acetas,	20
" oxalicum,	15	Potassæ arsenias,	50
" tannicum,	50	" chloras,	3·50
Alumen,	40	Potassii bromid.,	25
Ammon. carb.,	20	" cyanid.,	32
" murias,	20	" iodid.,	40
Antimonii et Potass. tart,	5·50	Quinia,	0·50
Atropia,	3	Quiniæ tannas,	0·25
Atrop. sulph.,	33	Sodæ arsenias,	50
Barii chlorid.,	10	" bicarbon.,	8
Brucia,	2·25	" boras,	60
Calcii sulphid.,	5	" carbonas,	98
Cinchonia,	0·50	" chloras,	20
Cinch. sulph.,	6·70	Sulphur,	0·10
Cupri acetas,	10	Strychnia,	0·25
" sulph.,	30	Strychn. nitras,	4
Ferri et Potass. tart.,	8	" sulphas,	22·50
" lactas,	16	Urea,	50
" sulphas,	25	Veratria,	1
Hydrarg. chlor. corr.,	7·50	Zinci chlorid.,	50
" cyanid.,	·27	" iodid.,	40
Iodinium,	1·90	" sulphas,	35
Morphia,	0·45		

—*Neues Jahrb. f. Pharm.*, 1869, Mai and Juni, 315, from *Pharm. Zeitsch. f. Russl.*

EXAMINATION OF CUBEBS.*

By E. A. Schmidt.

The January number of Archiv der Pharmacie, contains upon pages 1 to 49, an extract from the author's prize essay in an-

* Abridged by Prof. Maisch for the American Journal of Pharmacy.

swer to the query for 1869 of the Hagen-Bucholz'sche Stiftung. The author has used for his experiments, 1st, 10 pounds fresh cubebs, scarcely one year old; 2d, 6 pounds four to five years old; 3d, 10 pounds so-called cubeb stems, that is the rachis with which commercial cubebs are always mixed; 4th, about 1 pound of the sediment, which occurs in ethereal extract (oleoresin) of cubebs.

4500 grm. of the powdered fresh cubebs, containing 4·75 hygroscopic water (ascertained by drying for twenty-eight days over oil of vitriol,) were distilled with water previously distilled and absolutely free from ammonia; after nine distillations (30 pounds distillate each), volatile oil ceased to come over; 14·0 per cent. of oil were obtained, which was found to be soluble in 12820 parts water. The decoction contained mucilage (precipitable by baryta) albumen, starch (estimated from the dextrin and sugar formed by boiling with acids), a little resin (brown, bitter, identical with the resin obtained by alcohol), brown coloring matter (precipitated by hydrated alumina), red brown extractive and salts; sugar was not present.

The cubebs, exhausted by boiling water, were dried and treated with 92 per cent. alcohol; the alcoholic extract was washed with water and separated on standing into a dark green oily liquid, and a more solid red brown resinous mass, from which by distillation with water 9·27 grm. volatile oil of a yellowish green color was obtained. The green fixed oil was separated from the resin by repeated solution in hot diluted alcohol; the resin was dissolved in diluted potassa solution, which left cubebin, obtainable in crystals by the spontaneous evaporation of its alcoholic solution. The resin was precipitated from its alkaline solution by muriatic acid, the precipitate digested with ammonia, the solution precipitated by chloride of calcium, and this precipitate decomposed by muriatic acid, yields the acid resin (Bernatzik's cubebic acid). The ammoniacal mother liquid, on being neutralized, yielded a neutral resin, identical with that left undissolved by the ammonia.

The exhausted cubebs were dried and treated with ether, which took up ·511 per cent. green yellow fat. The cubebs now yielded nothing to petroleum ether, bisulphide of carbon, benzine

and chloroform, but potassa solution dissolved some more albumen. Dilute muriatic acid now took up from the exhausted cubebs, besides traces of iron and sulphate of potassa, the following salts in quantities calculated for the 4500 grm. cubebs originally used: 1·6629 grm. phosphate of lime, 18·160 grm. oxalate of lime, 0·880 grm. malate of lime and 21·648 grm. malate of magnesia.

450 grm. exhausted cubebs, previously to being treated with muriatic acid, were incinerated and yielded 15·10 grm. ashes containing silicic, sulphuric, phosphoric and carbonic acids, chlorine, lime, magnesia, iron, sand and some charcoal.

2500 grm. of old cubebs and 4500 grm. cubeb stems were treated in the same manner. The following table gives the results compared with those published by Bernatzik for cubebs.

		Fresh.	Old.	Stems.	B.'s analysis.
	Volatile oil,	14·215	13·041	1·769	9·457
Soluble in water.	Coloring matter,	6·940	6·096	7·777	8·100
	Mucilage,	8·187	8·024	7·609	
	Extractive,	4·240	4·860	6·800	
	Albumen,	2·714	2·533	——	
	Starch,	1·782	1·818	——	
	Fixed oil,	1·175	1·096	0·364	0·924
	Cubebin,	2·484	2·576	0·357	0·404
	Acid resin,	0·960	1·106	0·226	3·458
	Neutral resin,	2·558	2·968	2·789	3·515
	Green yellow fat,	0·511	0·408	——	?
	Phosph. lime,	0·037	0·084	0·031	?
	Oxalate lime,	0·403	0·362	0·750	?
	Malate lime,	0·019	0·027	0·004	?
	Malate magnes.,	0·481	0·422	0·011	?
	Hygroscopic water,	4·750	3·100	3·350	?
	Cellulose, &c.,	43·066	46·140	65·066	61·600
	Loss,	5·478	5·339	3·097	12·294
		100·000	100·000	100·000	92·752
Matter soluble in water,		20·234	19·756	23·235	8·100

The volatile oil of fresh cubebs consists of two oils, approximately 8·12 parts of spec. grav. 915, and 6·095 parts of sp. gr. 937. Old cubebs contain 7·6 pr. ct. volatile oil, sp. gr. 92 9 (none of 915), and 5·44 pr. ct. sp. gr. 937. Commercial oil of cubebs was found to be 929. The volatile oil of cubeb stems

was partly of 935, but mainly of 937 spec. grav. The composition of all these oils is $C_{30}H_{24}$; their compound with HCl crystallizes in fine, inodorous and tasteless needles, which are $C_{30}H_{25}Cl_2$.

Cubeb-camphor = $C_{30}H_{26}O_2$ was obtained only from the volatile oil of old cubebs, in which it appears to have been formed from the light oil.

The extractive contains some malate and acetate of potassa, small quantities of chloride of potassium* and sulphate of potassa, with traces of tannin. The extractive of cubeb stems is free from acetates, contains little malate, but is richer in chloride of potassium.

Cubebin is neither a glucoside nor a base; it appears to be more of a resinous nature and becomes amorphous under the influence of various chemical agents. HO,SO_3 colors it cherry red. From his analysis the author deduced the formula $C_{66}H_{34}O_{20}$ (the figures also agree well with Heldt's formula $C_{60}H_{30}O_{18}$.)

The neutral resin of Bernatzik is partly cubebin, rendered amorphous by potassa. The author's neutral resin is yellowish brown, friable, soluble in alcohol and caustic alkalies, little in ether, bisulphide of carbon and chloroform, assumes a carmine color by HO,SO_3. Composition $C_{26}H_{14}O_{10}$ (the figures also agree well with $C_{60}H_{34}O_{22}$ = cubebin + 4 HO.)

The acid resin (cubebic acid) cannot be obtained by Bernatzik's process. The alcoholic solution of the mixed resins yields with alcoholic acetate of lead a precipitate of cubebate of lead, the neutral resin being not precipitated. Cubebic acid is colored carmine to cherry red by HO,SO_3. It is white amorphous, and yields amorphous salts; it is soluble in alcohol, ether, bisulphide of carbon, petroleum ether, chloroform, ammonia. Its formula in combination is $C_{28}H_{12}O_{12}$ combined with two equiv. base.

The deposit from the ethereal extract (oleoresin) of cubebs

* When the alcohol is distilled from the tincture of cubebs, and the extract is taken up with ether, numerous crystals are found in the residue. I have repeatedly obtained these crystals, which are chloride of potassium, but no other analysis of cubebs with which I am acquainted mentions that salt. J. M. Maisch.

consists mainly of crystallized cubebin, surrounded by thickened oil, some fat and neutral resin, scarcely any cubebic acid.

The author has made some physiological experiments upon himself with the different principles isolated by him. The volatile oil in doses of ten drops every two hours produced sensation of heat in the stomach, which diffused over the whole body, headache, loss of appetite, difficulty in swallowing, vomiting, colic, diarrhœa, painful urinating, sleeplessness.

The extractive (10·2 grm. in 48 hours) and cubebin (0·2 to 1·0 grm. six times daily) were without any influence.

The neutral resin produced sensation of warmth in the stomach, little headache and colicy pains, but a considerable diuresis free from pain; the acid resin had similar effects, but appeared to be more powerfully diuretic. The appetite was decreased, and eructations frequent; stool and sleep normal.

Some therapeutical experiments were made by a friend of the author's in a military hospital.

Two cases of recent infection were treated for eight days with eight drops of oil of cubebs four times daily; physiological effects as described before. No effect on the disease; simple injections produced cures in a few days.

One case, having been treated for three days with injections, was now given the extractive, one grm. four times daily for eight days; symptoms of disease rather aggravated.

Two recent cases took 0·5 grm. cubebin ten times daily; dose increased on the third day to one grm., on sixth day to two grm. After eight days no effect upon the organism or the disease.

The resins were given in pills each containing 0·05 grm. Two cases took five times daily five pills, on the second day eight pills, each succeeding day two more (5 times 20 pills on the 8th to the 11th day.) The diuretic effect was apparent on the third day; sense of warmth in the stomach commenced and increased, also burning sensation on urinating. External treatment was then resorted to, and both cases discharged as cured after five and seven days.

The acid resin was given in the same dose and with the same diuretic effect, which was less apparent in a chronic case.

Of the constituents of cubebs, therefore, the two resins only

possess medicinal properties, which are simply diuretic. A preparation which would represent these properties might be made by separating the volatile oil by distillation, drying the cubebs, and preparing with alcohol a resinous extract.

ON A BROWN HAIR DYE.

By George McDonald.

Cairo, Ill., April 14th, 1870.

Editor Journal of Pharmacy, Philadelphia:

The preparation of a lead and sulphur dye for the hair, in which the ingredients would be in a state of perfect solution, has long been as great a puzzle to druggists and other interested parties, as the "quadrature of the circle" to mathematicians, or "perpetual motion" to dabblers in mechanics. But, unlike these, the problem under consideration is really (although, perhaps, unfortunately,) capable of solution.

Some years ago, when lead and sulphur hair dyes were more in demand than they are at the present time, the confident assertion of those who were supposed to know, that such a prepation free from sulphur sediment was a chemical absurdity, prompted me to experiment with the view of ascertaining whether this were indeed true.

The well-known fact that a soluble compound of lead and sulphur could not be obtained by the decomposition of a soluble lead salt by a soluble sulphuret, or, in other words, the insolubility of the sulphuret of lead, was regarded as an undubitable proof of the folly of such an undertaking. But chemistry is at the present day so rich in resources that it is hardly safe to assert that any chemical problem is impossible.

There is a class of salts known as the hyposulphites, many of which are freely soluble in water, and which are readily converted by absorption of oxygen into sulphate of the base and free sulphur. It is in the use of these salts that the key to the enigma lies.

We learn from chemical text-books that hyposulphite of lead is insoluble in water, and if we were to rest satisfied with what knowledge we can obtain of its chemical behaviour from them, we

would be as far from the solution of our problem as we were at the commencement. That hyposulphite of lead is insoluble in water is true, but like many other precipitates insoluble in water, it is readily dissolved by an excess of the precipitant.

Thus, if you add to a solution of *three* parts of acetate of lead a solution of *two* parts of hyposulphite of soda, you will have a white curdy precipitate of hyposulphite of lead insoluble in water; but if to this you add *ten* additional parts of hyposulphite of soda the precipitate will be redissolved, and a perfectly clear solution will be the result. This solution, when applied to the hair, is decomposed by absorption of oxygen from the atmosphere. One of the results of this decomposition is the formation of the dark-brown sulphuret of lead. It is to the formation of this compound in the hair that all lead and sulphur dyes owe their efficacy.

To those whose consciences will permit them to recommend such preparations to their customers, I submit the following formula:

℞.	Acetate of Lead,	℥ij;
	Hyposulphite of Soda,	℥j;
	Rose (or other perfumed) Water,	℥xiv;
	Glycerin,	f℥ij.

Dissolve the acetate of lead and hyposulphite of soda in separate portions of the perfumed water, filter separately, mix the solutions and add the glycerin.

In a short time after it is made, the solution will become slightly torbid. This may arise either from a small quantity of air which is contained in the liquid, or (perhaps) from the presence of a small amount of oxalic acid with which glycerin is said to be sometimes contaminated. It, however, soon becomes clear by deposition of a minute quantity of dark powder (sulphuret of lead) and remains so, so long as the bottle is kept tightly corked. I think it is quite as harmless as the ordinary lead and sulphur dyes, but this is, at the best, only a left-handed recommendation.

If it is desired to make a two-bottle preparation, like one now on the market, (limpid, fragrant and perfectly innocuous (?),) as the advertisements set forth, all that is required is to put the solution of hyposulphite of soda in one bottle and the solu-

tion of acetate in the other. In this case, however, it will not be necessary to use so large a proportion of hyposulphite of soda, as the two preparations of the article alluded to *curdle* on mixing. The proper proportions would perhaps be those of their chemical equivalents, *i. e.*, about *three* parts of acetate of lead to *two* parts of hyposulphite of soda.

The addition of glycerin to preparations of this kind serves a double purpose. It performs the part of a dressing to the hair, and by reason of its not being absorbed holds the salts in solution, and thus favors the play of chemical affinities.

ON SYRUP OF SENEKA.

By J. B. Moore.

The formula of the present Pharmacopœia for the preparation of syrupus senegæ, although an improvement on that of the edition of 1850, yet by no means affords a satisfactory preparation. Its defects and the objections to it are so familiar to every pharmacist that it is unnecessary to recount them here. The purpose of this paper is to offer a formula and process for the manufacture of this syrup, which, if properly managed, will *never* fail to yield an *excellent* preparation *void* of *all* the objectionable features of the officinal.

Take of Pulv. Seneka, No. 30, four troy-ounces;
Glycerin, four fluid-ounces;
White Sugar, in coarse powder, four troy-ounces;
Diluted Alcohol, quantity sufficient.

Moisten the seneka with two fluid-ounces of diluted alcohol, and after it has stood in a close vessel six hours, pack it, in small portions at a time, *very* tightly in a glass funnel prepared for percolation, then gradually pour upon it diluted alcohol until one and a half pints of tincture are obtained, or until the drug is exhausted. Evaporate the tincture by means of a water-bath, at a temperature not exceeding 140°, almost constantly stirring, until reduced to six fluid-ounces. When cool, filter through paper, and add sufficient water through the filter to make the filtered product measure six fluid-ounces. To this, transferred to a bottle, add the sugar and agitate it frequently during twenty-four hours. By this time the sugar will be nearly all dissolved,

and its solution may be completed in a few minutes, by placing the bottle in hot water and shaking occasionally. Lastly, add the glycerin, mix well and strain through muslin.

When the demand for the syrup is urgent, the sugar may be dissolved in the filtered liquid at once, by means of a moderate heat in an open vessel, in the usual way of forming syrup, observing to supply the loss sustained by evaporation, by adding sufficient water through the strainer to make the finished product, when *cold*, measure one pint.

Particular attention must be paid to the packing of the powder in the percolator to insure a *perfect* result, as this is one of the most important steps of the process. Its performance requires the exercise of but little judgment as to degree of compression, as it can scarcely be packed too firmly. It is best packed in small portions at a time, in strata of not more than a quarter or half inch in thickness, and should be compressed so firmly that the tincture, when it begins to flow, will not pass at a faster rate than from ten to fifteen drops per minute, which will increase as the exhaustion advances.

I have tried prolonging the preliminary maceration to twenty-four and even thirty-six hours, and after frequent trials could perceive but little *if any* difference in the result. Six hours give ample time for the powder to expand and its fibres to become thoroughly permeated and softened by the menstrum, which seems to be all that is requisite for the complete exhaustion of its medicinal properties.

If the process is managed with any degree of care and skill the exhaustion of the drug will generally be found complete by the time a pint and a half of tincture have passed. But in order to guard against inexperience and unskillful management, I have given the precautionary direction to continue the percolation "until the drug is exhausted."

Notwithstanding my strong predilections and conviction in favor of a finer grade of powders than are generally recommended for percolation, I have varied that preference in this instance, and have selected for the preparation of this syrup a much coarser powder than is directed in the U. S. P. for the same preparation. My reason for doing this is to avoid, in a measure,

extracting the large quantity of pectin and other objectionable inert principles which are taken up when a No. 50 is used. And in order to compensate for this increased coarseness of the powder, I have directed a short preliminary maceration and very close packing of the powder and consequently *slow* percolation, which ensures the thorough exhaustion of the drug.

In percolating seneka in *moderately* fine powder (No. 50,) in making this syrup, even with a menstruum consisting of two parts of alcohol and one part of water, I have upon several occasions found the concentrated tincture, when cool, to become of jelly-like consistence, almost solid, rendering filtration utterly impossible. But when a No. 30 powder is employed all that difficulty is avoided, the tincture is quickly filtered, all the usual impediments attending the manufacture of the syrup are removed, and the process becomes simple and easy of execution.

The syrup as made in accordance with the above formula is of reddish brown color, *perfectly* transparent, *permanent* and deposits but little if any upon standing. A sample of it made last summer is now in excellent condition, with no deposit, and as transparent as when freshly made. Another sample, made about four months ago, in which the sugar was dissolved by means of heat, is also in good condition with the exception that it contains a slight gelatinous deposit, which a strong heat serves to have the tendency to produce after the syrup has stood for some time.

The directions given in the above formula are such that, if strictly carried out, will not only prevent the result just mentioned, but will also shield the medicinal properties of the seneka from the injurious influence which a high degree of heat undoubtedly exerts upon them, and which should always be averted, when practicable, in all the preparations of this drug.

Philada., April, 1870.

REMARKS ON THE GRANULAR SALT OF CITRATE OF MAGNESIA.

By H. C. Archibald.

Of late years the demand for granular prepared citrate of magnesia, manufactured by the firm of Charles Ellis, Son & Co., of this city, has increased to such an extent as to make it now

quite an article of merchandise, and that, without its being advertised or in any way pushed into the market, the makers relying solely upon its intrinsic value to recommend itself to the notice of intelligent and practical physicians and pharmaceutists.

The attention of the writer, who is an employee of the above firm, was first called to the English article of granular citrate of magnesia, so-called, in the spring of 1867, and a few experiments demonstrated the fact that its component parts consisted principally of tartaric acid, bicarbonate of soda, sugar and a trace of magnesia.

To obtain a preparation that could be properly called granular citrate of magnesia, and having at the same time effervescing properties by the direct union of citric acid and magnesia, was found, by the writer, to be impracticable, and the idea was abandoned.

After a series of experiments to ascertain whether a granular salt could be made, which would contain citrate of magnesia and at the same time be effervescent and perfectly soluble, the following formula was adopted, which, if it be strictly adhered to, will afford a beautiful salt, possessing decided laxative properties, and very acceptable to the palate:

Take of Acid Citric, Powdered, . .	4 lbs.
Magnesia Calc. (Jenning's) . .	1½ "
Soda Bicarb (Chance's) . .	3 "
Acid Tart.	3 "
Pulv. Sach. Alb.	6 "
Ol. Lemons.	½ fl. oz.
Alcohol fort. q. s.	

To the powdered citric acid add the sugar, and mix thoroughly; then add the soda, magnesia, and acid tartaric, pass the whole through a No. 40 sieve three times, to insure its being thoroughly mixed, moisten the powder with stronger alcohol, and pass through a No. 8 sieve, and place on a tray made of wood in a warm room to dry; then add the oil of lemon and bottle instantly. It usually takes twenty-four hours and a temperature of 120° to perfectly dry the salt.

The advantage that a reliable preparation of this kind possesses is evident; it being of known strength, uniform in its

actions, and can be kept indefinitely without injury; it is freely soluble, dissolving almost instantly on being thrown into water, and forming a perfectly clear solution without residue; it has also a pleasant acid taste, and has proven to be a valuable agent in the sick room.

This preparation, like almost all other things, requires skillful manipulating to insure good results. The writer has made several thousand pounds of this salt, and has invariably found that whenever the directions were implicitly carried out, satisfactory products were the results.

The Granular Salts of Kissingen, Vichy, and Saratoga, are also made by the above firm, of which the writer, in a future number, proposes to offer a few ideas as to their mode of manufacture.

ON THE ALKALOIDS OF THE GENUS ACONITUM.

By Dr. F. A. Flückiger.

From the interesting essay of the author, published in the Archiv der Pharmacie, 1870, March, 196–215, we make the following extracts:

In 1857 Schroff's physiological experiments proved the existence in aconite tubers of two principles, one mainly narcotic in its action, and agreeing in this respect with the aconitia in use on the continent of Europe, and particularly in Germany, which has mainly been made by the late F. Hübschmann, of Zurich; the other one being extremely acrid, a property possessed also by "pure aconitia," obtained by Schroff from T. Morson & Son in London, and by pharmaceutical preparations made from bikh, bish, or ativisha, that is the tubers of some species of aconitum, among them aconitum ferox, indigenous to the Alpine regions of the Himalaya mountains. Since that time it was supposed, in Germany, that all English aconitia consists of this acrid alkaloid, for which Hübschmann proposed the name of pseudaconitia (Schweiz: Wochenschr. f. Pharm. 1868, p. 189), and gave the following characteristics: It is with difficulty soluble in ether, chloroform, and alcohol, but crystallizes readily, particularly from hot alcohol; it is soluble in hot benzol; is not altered by boiling water, and not colored by cold sulphuric acid; also not

after the addition of nitric acid; it has an alkaline reaction, and a burning, not bitter, taste. True aconitia, however, dissolves in 2 p. ether, in 2·6 p. chloroform, and in 4·2 p. alcohol, without separating in distinct crystals; it is colored yellowish by cold sulphuric acid, has an alkaline reaction, and a bitter, scarcely somewhat acrid taste.

The author confirms the statements of Hübschmann, and adds that pseudaconitia loses nothing in weight at 100° C.; the crystals from hot alcohol constitute thick prisms, which are not colored by hot concentrated phosphoric acid. True aconitia sustains no loss at 100° C., fuses between 110 and 120° without decomposition, and produces a violet color, which lasts for several days, with hot, concentrated phosphoric acid.

Dr. F. obtained some aconitia from T. Morson & Son, also of Hopkins & Williams, in London. The former possessed a purely bitter, not in the least acrid taste, and gave the phosphoric acid reaction both before and after fusion. The aqueous solution of the latter was bitter and distinctly acrid, but the reaction with phosphoric acid was more of a brownish color.

The author also obtained from Mr. Thomas B. Groves, of Weymouth, aconitia, purchased of Morson & Son in 1860 and in 1856; also samples made by Groves, marked respectively amorphous aconitia from *Ac. napellus*, crystalline aconitia from the nitrate, and nitrate of aconitia. The first sample gave a purely violet color with phosphoric acid; 2, 3, and 4 were colored brownish, or greyish violet.

It must be concluded from this, that the aconitia used in England does not differ to any great extent from that used on the continent.

The London house of Roller & Widemann met, in 1868, with a very cheap aconitia, which was examined by Merck (Ph. Journ. and Transact. x. 248), who found it soluble with difficulty in ether and alcohol; it crystallized readily from the latter, and was not altered by boiling water. These are properties of pseudaconitia.

The author ascertained that aconitia is made in England of the East Indian tubers, as well as of those from Switzerland.

An extract which he prepared from bikh-tubers had the physiological effects of aconitia.

Hübschmann discovered in *Aconitum Lycoctonum* two alkaloids—lycoctonina and acolyctina—which latter he found probably identical with his napellina, which is uncrystallizable, insoluble in ether, and not precipitated by ammonia from its saline solutions. Lycoctonina, obtained from its discoverer, was found by Dr. F. to be in white light prisms and needles, of alkaline reaction, fusible and congealing to an amorphous vitreous mass, which, moistened with water, at once forms little bunches of crystals; fusion and recrystallization occur without change of weight. It is readily soluble in chloroform, sulphide of carbon, ether, alcohol, oil of turpentine, amylic alcohol, sweet oil of almonds, and petroleum ether, but requires about 800 p. of water for solution; no color reactions could be obtained with sulphuric, nitric, chromic, or concentrated phosphoric acids.

The author sums up his results as follows:

1. Aconitia is contained in the tubers of the blue flowering European species of aconitum, particularly *A. napellus*.

2. Also in similar species of the himalaya mountains, partly called bikh; among them is also *Ac. napellus* (likewise *Ac. Lycoctonum*.)

3. Aconitia is wanting, according to Hübschmann, in *Ac. Lycoctonum*, which has yellow flowers.

4. Aconitia has the following properties: It becomes soft in boiling water, and imparts a violet color, lasting in the cold for several days, to phosphoric acid, which has been evaporated as far as possible in the water-bath, and has a temperature of 80 to 100° C. The aqueous solution has a bitter taste free of acrimony, is not precipitated by bichloride of platinum, but yields, with iodohydrargyrate of potassium, an uncrystallizable precipitate. It is very readily soluble in ether, chloroform and alcohol (five parts 75 per cent. alcohol at 15° C. dissolve one part.) It is anhydrous and fuses near 120° C. It forms a monochlorhydrate; the nitrate crystallizes well; the free base may be in indistinct microscopic crystals.

5. All aconitia from England, examined by the author, agreed

with these tests; that of Hopkin and Williams also had an acrid taste.

6. The distinctive appelation, "English Aconitia," is wrong (in the sense in which it has been used in Europe.)

7. There exists a base entirely distinct from aconitia, of uncertain origin, but probably derived from aconite tubers (bikh) of Nepal and other Alpine countries of the Himalayas.

8. This pseudaconitia was first noticed by Von Schroff, who named it English or Morson's aconitia. Wiggers proposed the name of napellina. Flückiger called it nepalina. Ludwig suggested acraconitia.

9. Pseudaconitia does not soften in boiling water, is at 100° C. not colored by concentrated phosphoric acid, has a burning, not a bitter taste. It is insoluble in water, little soluble in ether, chloroform and alcohol, but crystallizes from these hot solutions readily in large prisms.

10. Napellina is different from aconitia and pseudaconitia.

11. Lycoctonina is likewise a well defined alkaloid, characterized by the readiness with which it crystallizes after fusion, on being moistened with water; also by the behaviour of its aqueous solutions to bromine water and iodohydrargyrate of potassium (the precipitates on standing, crystallize readily.)

J. M. M.

ON PERU BALSAM.

By K. Kraut.

To obtain Stoltze's oil of Peru balsam (Frémy's cinnamein), two pounds of the balsam are mixed with the same quantity of ether, and agitated with two pounds of caustic soda solution, containing three or four per cent. NaO. After the separation of the ethereal liquid, the treatment with ether is repeated until it ceases to take up oil. The alkaline solution yields principally resin, cinnamic and little benzoic acid. The ethereal solution, after the distillation and evaporation of the ether, yields nearly 60 per cent. of oil. By fractional distillation under reduced pressure and in a current of carbonic acid, three portions are obtained:

1. At about 200° C. very little benzalcohol, not quite pure.

2. At about 300° C. the largest proportion consisting of benzylo-benzoic ether, yielded with alcoholic potassa solution, benzoic acid and benzalcohol. On rectifying the ether in a current of carbonic acid gas, a portion was obtained in crystals, proving the correctness of Cannizaro's observation, that under certain circumstances the ether will crystallize.

3. At about the boiling point of mercury benzylo-cinnamic ether, yielding with alcoholic potassa solution cinnamic acid and benzalcohol.

Dark colored, thick residues were left in the retort, which might possibly contain styracin and carbobenzoic acid; but on treating the oil of Peru balsam with alcoholic potassa solution only cinnamic and benzoic acids were obtained, and the crude benzalcohol, by fractional distillation and oxydation of the fractions with chromic acid, did not yield any products from which the presence of styron or styracin might be inferred.

Peru balsam, therefore, contains free cinnamic acid, resin and the benzylic ethers of benzoic and cinnamic acids. The small quantities of free benzoic acid and benzalcohol are most probably due to the decomposing influence of the caustic alkali.

Balsam Peru, may, however, like other drugs, sometimes contain benzoic or cinnamic acid in preponderance, and may even occasionally contain styracin.—*Annalen d. Ch. und Ph., Nov.*, 1869, 129–137.

CHLORAL-HYDRATE.

In a communication to the Archiv d. Pharm. 1869, Dec., 248, 249, E. Schering, of Berlin, an extensive manufacturer of this new hypnotic and anæsthetic, makes the following statement:

Chemically pure chloral-hydrate ($C_2Cl_3OH+H_2O$) forms white acicular crystals, has a peculiar pungent odor, a somewhat bitter taste, produces in concentrated solution a slight irritation in the throat, fuses and sublimes readily, and keeps well in glass-stoppered bottles, even in aqueous solution. In dispensing, glass, porcelain, or silver utensils are to be used.

It is readily soluble in distilled water; only after prolonged

contact with the atmosphere traces of hydrochloric acid are discernible, which must be carefully neutralized by ammonia if the solution is to be used for subcutaneous injections.

The dose of chloral-hydrate depends on the individuality of the patient and on the desired effect. For internal use Dr. O. Liebreich recommends the addition of mucilago acaciæ or syrupus aurantii; it is important, however, to avoid the use of all alkaline vehicles and correctives, which decompose chloral-hydrate.

The following formulas for administering chloral-hydrate are taken from Dr. Liebreich's pamphlet:

℞. Hydratis chlorali, 2·5 (=38 grs.
Aq. destill.
Mucil. Acaciæ, *aa* 15·0 (= ℥ss.)
M. S. Take at one dose. (Ordinary hypnotic.)

℞. Hydratis chlorali 4·0 (=62 grs.)
Aquæ destill.
Syr. aurant. *aa*, 15·0 (=℥ss.)
M. S. A tablespoonful at night. (Ordinary hypnotic.)

℞. Hydratis chlorali 5·0,
Aquæ destill. 10·0.
M. S. A teaspoonful in a glass of wine, beer or lemonade. (Hypnotic.)

℞. Hydrat. chlorali 4·5 to 8·0! (70 to 124 grs.!)
Aq. destill.
Syr. Aurant. *aa*, 15·0 (℥ss.)
M. S. One dose. (In delirium potatorum.)

℞. Hydrat. chlorali 2·0 (ʒss.)
Aquæ destill. 150·0 (℥v.)
Syrupi Aurant.
Mucil. Acaciæ *aa*, 15·0 (℥ss.)
M. S. A tablespoonful every hour. (Sedative.)

℞. Hydrat. chlorali 5·0,
Aquæ destillatæ q. s. to make 10 cubic centimetres (fʒijss.)
M. S. 1 to 4 cc.m. (♏ 15 to fʒi), for subcutaneous injections.

Dr. Rieckher gives the following tests for pure chloral-hydrate (N. Jahrb. f. Ph., 1870, Jan., p. 15): It has a peculiar odor and taste, is dry and colorless, dissolves clear in its own weight of water, fuses when heated upon platinum foil, and evaporates without residue and without taking fire; the aqueous solution is not disturbed by nitrate of silver; agitated with colorless concentrated sulphuric acid, it becomes turbid without coloration even on being heated; acidulated with sulphuric acid and faintly tinged with permanganate of potassa, no decolorization takes place in two to three hours; nitric acid sp. gr. 1·20 is not colored, nor does it act upon it in the cold or when heated.

Hager (Pharm. Centralhalle, 1870, 9, 10,) gives nearly the

same tests; he has met with a chloral-hydrate (not manufactured in Germany,) in loose glass-like rhombic needles and of a stinging odor. It was soluble in eight parts water; heated in a silver spoon; it burned with a yellow-sooty flame; it sank in concentrated sulphuric acid (pure chloral-hydrate floats upon it), became rapidly liquid, the mixture was much clearer after shaking, and became brown on heating to the boiling point; nitric acid of twenty-five per cent. reacted briskly with the evolution of brown-red vapors; with potassa solution, sp. gr. 1·3, it separated upon the surface a liquid with the odor of chloroform and aldehyde, from which, after agitation, chloroform collected at the bottom (pure chloral-hydrate at once separates chloroform and does not generate the odor of aldehyde). No analysis was made for want of material.

No. 21 of the Pharmac. Zeitung states that the chloral-hydrate made by Roussin, of Paris, yielded but 61·7 per cent. chloroform and on examination proved to be an alcoholate of chloral $C_4HCl_3O_2+C_4H_6O_2$, containing 23·7 per cent. alcohol. It is a semi-transparent camphor-like mass in long adhering needles, of a sharp ethereal odor and burning taste, not deliquescent in water, less soluble than chloral-hydrate. It may be obtained by adding 31·18 grm. absolute alcohol to 100 grm. anhydrous chloral. J. M. M.

ON BITTER ALMOND WATER.

By Franz Hübner.

If the directions of the seventh edition of the Prussian Pharmacopœia are strictly followed a good bitter almond water is always obtained, unless the bitter almonds are adulterated with the sweet variety, which fraud is sometimes practised on account of the higher price of the former. The press cakes of bitter almonds, from which the fixed oil has been separated, must be finely powdered and then mixed with seven parts, or if possible, more of soft water. After maceration for twelve to fifteen hours in a close vessel, the water is distilled off by injecting steam, until the requisite quantity is obtained,* which is

* The press cake from 6 parts of bitter almonds, with the requisite quantity of water and 1 part of alcohol, yields at least 6 parts distillate, containing 1 part anhydrous hydrocyanic acid in 720 parts.

usually too strong in hydrocyanic acid, and requires to be diluted. The author adds only one half of the alcohol to the contents of the still, the other half going into the receiver, whereby a water of slight turbidity, not of a milk-like appearance, is obtained. Distillation over free fire invariably yields a weak water, probably in consequence of unavoidable partial overheating.

The author has also used peach kernels, with the following result: 95 lbs. of the same yielded, by cold expression, 25 lbs. of filtered clear, faintly reddish yellow oil, resembling benneseed oil; by warm pressure 8 lbs. filtered oil somewhat darker, 60 lbs. press cakes and 2 lbs. loss including the residue upon the filters. The 60 lbs. press cakes, equal to about 92 lbs. kernels, yielded, when treated as described, 92 lbs. water, from 2 oz. of which 8 grains dry cyanide of silver was obtained, so that an addition of about 18 lbs. distilled water was requisite to reduce it to the strength of the Pharmacopœia, viz.: $6\frac{2}{3}$ grs. AgCy from 960 grains of the water. The water, as thus obtained from peach kernels, is identical with that from bitter almonds.—*Archiv. der Pharm., Dec.*, 1869, 226–229.

ON THE VESICATING ACTION OF CANTHARIDATE OF POTASSA.

By E. Delpech.

The author, after referring to the ordinary blistering cerate of cantharides of the Codex, and criticising its resinous and fatty ingredients and its uncertainty, suggests that we should look to cantharidin, and says that a mixture of elastic collodion 400 parts, and cantharidin *one* part, spread on adhesive plaster, possesses a very energetic vesicating power.

The volatility of cantharidin, even at ordinary temperatures, the author alleges as a reason for seeking some means of fixing this principle, and having found the memoir of Messrs. Massing and Dragendorff in a German journal, deems the views therein contained afford the means sought.

These authors consider cantharidin ($C^{10}H^6O^4$) as an anhydride, which in its combinations with bases fixes two equivalents of

water, and which makes the formula of cantharidic acid $C^{10}H^6O^4$, 2HO. This acid does not exist in a free state, but is described as forming compounds with the metals.

The cantharidates of potassa, soda, and ammonia are soluble in water, whilst the cantharidates of the common metals are insoluble, and may be obtained by double decomposition.

Cantharidic acid is considered bi-basic. Solutions of the alkaline cantharidates, treated with acetic acid, precipitate, not cantharidic acid, but its anhydride cantharidin. This form of cantharidin is more soluble than the ordinary, due probably to its pulverulent state. The author has not directed his researches to the constitution of this acid, nor has he examined the theory of Messrs. Massing and Dragendorff, which he thinks is not supported by sufficient evidence.

Some particles of cantharidate of potassa placed on the arm caused vesication in a rapid manner, without the intervention of a solvent. A morsel of filtering paper moistened with a cold watery solution of cantharidate of potassa has, after drying, caused a vesication perfectly defined. This paper after fifteen days had lost none of its energy, from which the author infers that it is perfectly fixed and stable. It is also as vesicant as cantharidin. Three blisters were prepared, and applied simultaneously; one dry, the second moistened with vinegar, and the third with water. The first took seven hours, the other two five.

Cantharidates are prepared by the direct action of the alkali on cantharidin in the presence of water, and by the aid of heat. The solution is evaporated and crystallized. It presents the form of fine scales. The ammonia salt loses its base at 212° F.; it is acid to litmus. The cantharidate of potassa, on the contrary, is very stable, and has an alkaline reaction with litmus. The soda salt has the same characters.

The author has found another process for the preparation of the potassa salt. Two grammes of cantharidin are dissolved in 150 grammes of alcohol. Then add 1·6 gramme of caustic potassa dissolved in a very little water, and mix them, when the whole becomes a soft crystalline mass, from which the alcohol is separated by pressure.

The composition of the potassa salt is,

$$C^{10}H^{6}O^{4}, KO\,HO + HO.$$

98 parts of cantharidin gives 163 parts of cantharidate of potassa. Boiling water dissolves 8·87 per cent.; cold water 4·13; boiling alcohol 0·92; cold alcohol 0·03 per cent. It is also insoluble in ether and chloroform.

The author proposes the following formula for a blistering tissue, after numerous experiments:

Take of Gelatin,	30	grains,
Water,	150	"
Alcohol,	150	"
Cantharidate of Potassa,	6	"
Glycerin, a sufficient quantity.		

This liquid is spread uniformly with a brush on gutta percha in thin sheets, so that each square of four inches will contain one centigramme (about one-seventh of a grain) of the cantharidate of potassa. The strength may be varied at will.—*Jour. de Chim. Méd.* Mars, 1870.

EXAMINATION OF SOME OF THE RESINS AND GUM RESINS.

By Dr. Sace (of Switzerland.)

(Translated from the German by Chas. Caspari, Jr.)

The author states that, having observed a great analogy between these substances, he was induced to test their chemical reactions, in order to ascertain something more definite about them. The following substances were used by him, in fine powder, in his experiments, viz.: Gum copal, amber, dammar, shellac, elemi, sandrach, mastiche and rosin. The solvents, given below, were used in the quantity of thrice the bulk of gum, and allowed to act upon the same for 24 hours, at a temperature of 59—72° Fahr.

In boiling water resin changes to a semiliquid mass; dammar, shellac, elemi and mastiche cake, and copal, amber and sandrach are not affected at all. In alcohol, dammar and amber are insoluble; copal cakes; elemi is with difficulty soluble; rosin, shellac, sandrach and mastiche dissolve very readily. In ether, amber and shellac are insoluble; copal swells; rosin, elemi, sandrach and mastiche dissolve readily.

In acetic acid rosin swells; the others are not changed. In solution of caustic soda shellac dissolves readily and rosin with difficulty; the others are not affected by it. In bisulphide of carbon, amber and shellac are insoluble; copal swells; elemi, sandrach and mastiche dissolve very slowly, but dammar and rosin readily.

Oil of turpentine dissolves neither amber nor shellac, but dammar, rosin, elemi and sandrach; mastiche is dissolved very readily.

Boiling linseed oil affects neither copal nor amber; dissolves shellac, elemi and sandrach with difficulty, but readily dammar, rosin and mastiche.

Benzole does not dissolve copal, amber and shellac; elemi and sandrach only with difficulty, but dammar, resin and mastiche readily.

Coal naptha affects neither copal, amber nor shellac; is a poor solvent for rosin, elemi and sandrach, but a ready one for dammar and mastiche.

Concentrated sulphuric acid dissolves all of the substances and colors them at the same time dark brown, with the exception of dammar, which assumes a bright red color.

Nitric acid imparts a dull yellow color to elemi, light brown to mastiche and sandrach, but scarcely affects the others.

Solution of ammonia does not affect amber, shellac, dammar and elemi; copal, sandrach and mastiche swell at first and then dissolve; resin dissolves very readily.

By means of these reactions it will be no great difficulty to test the purity of these substances in commerce.—(*Polytechnisches Notizblatt*, 1869, xxiv, S. 310.)

A NEW ACID COMPOUND OF SULPHUR.

(Translated from the German by Chas. Caspari, Jr.)

When metallic zinc is placed into an aqueous solution of sulphurous acid it gradually disappears, without the liberation of any gas; the result being the formation of sulphite and hyposulphite of zinc. Prof. Schœnbein at first called attention to the fact that the solution, during the reaction, temporarily assumes a bright yellow color, and has the power of decolorising indigo, which latter he considered due to an oxidising property

of the liquid, and accounted for it by a temporary formation of ozone.

Recently, Schutzenberger investigated the matter more thoroughly, and July 19th, 1869, reported the result of his researches, contradicting Schœnbein's theory, to the Paris Academy of Science. He found that this discoloration of indigo is by no means due to an oxydation, it being well known that indigo is also discolored and changed to white indigo by powerful reducing agents, regaining its blue color upon exposure to the oxygen of the atmosphere. As indigo, discolored by the above solution, will also regain its blue color upon exposure to air, it is evident that the discoloration is due to a reduction of the indigo, and this effect, together with the yellow tint in the solution, must be owing to the presence of a powerful reducing compound. Its affinity for oxygen is so great that the zinc filings, still moist with the solution, upon exposure to air will become heated to a temperature of 55—60° Cent.; hence its power of reducing must be very great and similar to that of nascent hydrogen. Salts of copper, silver, mercury and lead are readily reduced by it to the metallic state, and bichromate of potassa to oxide of chrome; the salt of copper deposits, besides the metallic copper, also its combination with hydrogen (cuprous hydride.)

After many attempts, Schutzenberger at last succeeded in isolating this new body and examined it more definitely; he found it to be an acid, very unstable in its uncombined state, and succeeded in isolating it only by using an alkaline sulphite in place of free sulphurous acid, by which means he obtained the corresponding salt of the new acid. By allowing zinc to act upon a concentrated solution of bisulphite of soda, he obtained the soda salt of the new acid, possessing the same affinity for oxygen as the free acid, and which can only be kept out of contact with air; the acid is monobasic and its formula is HS_2O_3. The radical of the acid contains besides oxygen also hydrogen, and this accounts for its great deoxidising property; it gives up the hydrogen of its radical, thus liberating nascent hydrogen. S. names this acid hydrosulphurous acid (acide hydrosulfureux), it being derived from hydrogen and sulphurous acid.—(*Polytechnisches Notizblatt*, 1869, xxiv, S. 365.)

LINIMENTUM POTASSII IODIDI CUM SAPONE.

By Nathaniel Smith.

This liniment owes its place in the British Pharmacopœia to Dr. Rumsey, of Cheltenham, a member of the Medical Council; the formula was supplied to him from the 'Form-book' of the business with which I am connected.

The liniment has been in use in Cheltenham for more than twenty years, and during that period has been adopted by the medical profession in this locality as a preparation in every way more desirable and efficacious than the Unguent. Potass. Iodid.

The formula was copied from a Pharmaceutical Journal of some twenty-five or thirty years ago with a German origin; it was then prescribed with a large quantity of spirit. As soap with spirit of wine in a solid form does not admit of being rubbed in so easily as soap with water, the water process was adopted.

The directions of the Pharmacopœia are not sufficiently clear; for instance, no soap made with vegetable oil could answer well; if pure curd soap, which is made with Russian tallow, were used in the proportion I propose naming, and the directions for mixing followed, I think all who now condemn the preparation would extend to it a verdict exactly the reverse. I recommend,

*White curd soap	2 oz.
Iodid. Potass.	1½ oz.
Glycerin	1 oz.
Distilled water	10 oz.
Essential oil of lemon . . .	1 dr.

Reduce the soap into fine shreds, and melt in a water-bath with the whole of the water and the glycerin; when the soap is perfectly dissolved, pour it into a No. 9 Wedgwood mortar, in which the iodide of potassium has been previously reduced to fine powder; mix briskly, and continue the trituration until the mortar has become cool, and the liniment assumes the character of ice cream. Set aside for an hour, after which gently rub in the oil of lemons.

* For this use the white curd soap made by Messrs. Gibbs, of the City Soap Works, or Benbow's curd soap.

It will be noticed the quantity of soap in this form is larger than in that of the Pharmacopœia. At Dr. Rumsey's suggestion, and while the B. P. was in process of construction, the glycerin was added; it was subsequently found necessary to increase the soap, and hence the 12 drams were increased by 4 drams.

I purpose sending to Bloomsbury Square a specimen of the liniment made from the above directions.—*Pharm. Journ., Lond. March*, 1870.

Cheltenham, February 18*th*, 1870.

THE EMPLOYMENT OF BISULPHIDE OF CARBON IN PHARMACY.

M. Lefort has been making experiments upon the employment of bisulphide of carbon in the preparation of what he calls "sulpho-carbonic extracts" of medicinal plants. Since moisture opposes a certain obstacle to the solvent action of the sulphide of carbon, he first dries the powdered vegetables at a temperature of about 50° to 60° C. He then exhausts the dry powder by maceration with several quantities of the sulphide successively applied, decanting and filtering the solution obtained. The exhausted vegetable powder retains about half its volume of the liquid, which can be recovered by distillation. The tincture obtained is distilled by means of a water-bath, the residue being freed from the last traces of sulphide of carbon by heating gently in the open air. When this has been entirely expelled, the odor peculiar to the plant is distinctly apparent. 100 grams of dry powdered leaves of digitalis, belladonna, henbane, stramonium, aconite, and conium have given quantities very nearly approaching to 3 grams in each case; but, if we consider that the plants lose during desiccation three-fourths of their weight, we may conclude that the fresh leaves contain no more than 75 per cent. of principles soluble in bisulphide of carbon.

In all these extracts four chief constituents have been found: 1. A fatty matter, apparently identical in the several cases. 2. Chlorophylle. 3. An odorous principle differing with each vegetable. 4. One or more organic bases in the condition of the salts contained naturally in the plants. The presence of

the alkaloids can be rendered evident by their action upon animals and by various reagents, such as iodhydrargyrate of potash or tannin. The purpose for which the author designs these extracts is the manufacture of medicated oils, a class of preparations scarcely ever used in this country; but his memoir is interesting, as illustrating the applications to which this most valuable solvent, bisulphide of carbon, is capable of being adapted. These "sulpho-carbonic extracts" would be worth trying in the preparation, for instance, of certain of the plasters, since they are all easily miscible with fatty matters. Bisulphide of carbon might be employed with advantage to replace ether in certain cases, as well as in such an instance as the following, given by M. Lefort: Camomile flowers contain two odorous principles, the one volatile, the other fixed, but which are both very soluble in bisulphide of carbon. An extract of the flowers can easily be made by first bruising them in a mortar, without drying, and then exhausting as in the other cases. 5 per cent. of semisolid extract is obtained, which unites all the properties of the camomiles.

M. Lefort employs maceration; probably in many cases percolation would be found to answer better.—*Pharm. Journ.*, London, April, 1870.

COD-LIVER CREAM.

To the Editor of the Pharmaceutical Journal:

Sir—The following is worthy of mention in your Journal as an admirable recipe for a preparation that is somewhat extensively vended in several parts of the country under the alluring title of "Cod-liver Cream."

A quarter of an ounce of elect gum tragacanth, steeped in sixteen ounces of cold water for twenty-four hours—during which time it should be stirred occasionally—yields a fine, gelatinous mucilage, which, when mixed in any proportion with Cod-liver Oil and simply shaken with it, permanently diffuses the oil into particles, which in vain struggle for reunion.

It is usual to mix the mucilage and oil in equal parts, and it is further only required to sweeten, and add, as a preservative

and savorer, to each ounce of the mixture one drachm of spirit of wine, to which has been added a drop of essence of lemon, the same quantity of essence of almonds, and a trifle of oil of cassia.

Thus is the *mélange* completed, and of so agreeable a flavor is the result, that to most palates it would be found to acquit itself creditably in comparison with an average custard.

EMULSIO.

—*Pharm. Journ.*, London, April, 1870.

STRYCHNINE AN ANTIDOTE TO CHLORAL.

Dr. Liebreich, the discoverer of the therapeutic action of chloral, has been seeking, and announces that he has found the antidote to this powerful agent.

He first of all established the fact that chloral diminishes the effects of strychnine, provided it is given very promptly after the exhibition of the poisonous alkaloid.

A much more important result has been obtained in another series of experiments which Dr. Liebreich made subsequently to this, and which had for its object to demonstrate the effect of strychnine upon animals poisoned by fatal doses of chloral. The following is an apparently conclusive experiment:

Two rabbits received each 2 grams (about 30 grains) of chloral. After half an hour both were in a condition of profound narcotic sleep; the muscular relaxation was such that they appeared as if dead, the respiration being feeble and slow. A milligram and a half (less than one fortieth of a grain) of nitrate of strychnia was injected into one of them. In ten minutes after this operation the respiration began to resume its activity, the animal moved when irritated, but there were no convulsions; the muscles recovered their tonicity; when the feet of the animal were drawn out he drew them in again. Two hours afterwards the rabbit was sitting up, and four hours after the injection he was completely restored to his usual condition. The other rabbit, on the contrary, which had not received any strychnine, was dead two hours and a half after the administration of the chloral.

A third rabbit, to which no chloral had been given, but only

1½ milligram of nitrate of strychnine, died ten minutes after in violent tetanic convulsions. Nothing similar was manifested after the injection of the strychnine into the rabbit which had previously received some chloral.

It results from these experiments that strychnine, administered after an excessive dose of chloral, cuts short and destroys the effect of the latter, and that without producing its own characteristic action. Dr. Liebreich proposes to make use of injections of nitrate of strychnine in accidents produced by an overdose of chloral or chloroform.—*Pharm. Journ.*, London, April, 1870, from *Comptes Rendus*, 21*st February*.

LIGHT SULPHATE OF QUININE—A FRAUD.

By Louis Strehl.

A small lot of quinine was recently purchased in this city, bearing the following label: "Light Sulphate of Quinine; Manufactured by Lord Bros., Ludgate Hill, London." The manufacturers being unknown, the "quinine" was submitted to the ordinary tests for its purity.

A casual glance at the article excited no suspicion, but upon a closer scrutiny, the crystals were found to be colorless rhombic prisms, about a line in length, distinct and not interlaced to such an extent as we see them in sulphate of quinia. The taste was bitter, resembling that of the latter alkaloid. The crystalline shape could be readily distinguished by the naked eye.

The crystals were entirely soluble in cold water, and this solution, when treated with chlorine water and ammonia, gave no characteristic indication of quinia. Chlorine water added to a solution of the salt, followed by ferrocyanide of potassium and afterwards by a few drops of water of ammonia, gave no indication of quinia.

The above results show the entire absence of quinia in the so-called "Light Sulphate of Quinine."

An aqueous solution of the salt was precipitated by ammonia and a portion of the filtrate, treated with chloride of barium, gave no precipitate, showing the absence of sulphuric acid. Another portion of the filtrate was slightly acidulated with nitric

acid, and treated with nitrate of silver, which produced a copious white precipitate, soluble in excess of ammonia, showing the presence of hydrochloric acid.

It having been demonstrated that the article contained no quinia, further examination was decided on, having in view the identification of the alkaloid. It is freely soluble in cold and much more so in hot water, soluble in alcohol; cold concentrated sulphuric acid dissolves it without change of color, but an odor of hydrochloric acid is developed; on the application of heat the solution becomes light brown; the crystals are freely soluble, without change of color in concentrated hydrochloric and nitric acids. Soluble in chlorine water without change of color, and upon the addition of ammonia a dirty white precipitate is produced not soluble in excess of ammonia, the liquid filtered from the precipitate was of a straw color.

A solution of the salt, to which a few drops of dilute hydrochloric acid were added, when treated with ferrocyanide of potassium, yielded a copious yellow precipitate. Upon the application of a gentle heat the precipitate dissolved, and the solution upon cooling deposited an abundance of beautiful golden yellow crystals.

These tests, while showing the absence of quinia, furnish conclusive evidence that the alkaloid is cinchonia, containing traces of cinchonidine.

The reaction with nitrate of silver, already mentioned, shows the alkaloid to be in combination with hydrochloric acid. The "Light Sulphate of Quinine" is, therefore, *hydrochlorate of cinchonia*. The latter salt resembles quite closely in appearance the sulphate of quinia, and it is a substitution which might readily pass unnoticed. The manufacturers have taken advantage of this resemblance to perpetrate an extensive and most reprehensible fraud, and it is to be hoped that their field of operation may be transferred from Ludgate to "Newgate," with the privilege of conducting business in the latter locality for an unlimited period.

Chicago, February, 1870.

—*The Pharmacist, Chicago March*, 1870.

FERRI ET STRYCHNIÆ CITRAS.

By N. Gray Bartlett.

There is a considerable and increasing demand for this preparation; it is found in commerce containing various proportions of strychnia, usually, however, either one or two per cent. of the alkaloid. It differs also in respect to solubility, one variety being nearly insoluble, and another dissolving readily.

Citrate of iron and strychnia is usually prescribed in solution, and it is the soluble variety that is most generally used and esteemed. Any compound in general use by physicians, containing such a potent remedy as the article in question, should have its composition authoritatively defined; it is for this reason, and with the belief that it is a valuable addition to the Materia Medica, that the following process is suggested for the consideration of the revisers of the Pharmacopœia.

Ferri et Strychniæ Citras.

Take of Solution of citrate of iron, one pint.
Stronger water of ammonia, a sufficient quantity, (about two troy ounces and a half.)
Crystallized strychnia,
Citric acid,
Water, of each, a sufficient quantity.

Exactly neutralize the solution of citrate of iron with the stronger water of ammonia, cautiously added; allow the liquid to cool, and accurately determine its weight. Pour one troy ounce on a pane of glass, and set it aside to dry, at a temperature of 90°. Remove the dried salt from the glass, ascertain its weight and re-dissolve it in the solution. Apply the ratio of salt to liquid to the original weight of the solution, and, for every ninety-eight grains of the citrate of iron and ammonia present, employ one grain of crystallized strychnia, and one grain of citric acid.

Dissolve the citric acid in a fluidounce of water; rub the strychnia with the same measure of water, and to it add gradually the acid liquid, stirring until complete solution is effected.

Heat the solution of citrate of iron and ammonia on a water-bath to 120°, and pour into it with brisk agitation of the liquid, the strychnia solution; rinse the mortar with a little water and

add this also to the heated liquid. Mix thoroughly, and allow the solution to stand twenty-four hours. Then filter, evaporate on a water-bath, at a temperature below 150°, to a syrupy consistence, spread on plates of glass, and dry in an atmosphere heated to about 90°.

The salt thus prepared is in garnet-red, translucent scales, soluble in water in all proportions; it contains one per cent. of strychnia, this being considered the most appropriate strength in consideration of the relative doses of the alkaloid, and the iron salt.

The method of assay to determine the proportionate amount of strychnia, is advised to insure accuracy and uniformity. The formula has been used by the writer for several years and has always yielded a satisfactory product. In experimenting upon this salt it was found that the citrate of strychina was liable to crystallize from solutions containing an excess of acid; a solution of citrate of iron, not quite neutralized with ammonia, deposited almost the entire amount of the alkaloid upon standing twenty-four hours. It appeared in cubical crystals, slightly colored. The writer believes it to be essential to the successful use of this formula, that the iron solution be *exactly neutralized*, an excess of alkali being equally inadmissible. Litmus paper moistened, dipped into the liquid, and afterwards washed with distilled water, gives accurate indications; fresh pieces of paper should be employed in every repetition of the test.

In the experience of the writer the citrate of strychnia will never separate from a neutral solution of citrate of iron and ammonia. If such an occurrence be possible, it will be made evident during the twenty-four hours intervening between the formation of the solution and its filtration; and it is with this object that the interval is prescribed.

The citrate of iron and strychnia is very deliquescent, and will not dry and scale properly if the atmosphere be very humid; accordingly, it is difficult to prepare this salt during the summer months; in winter it dessicates without the slightest difficulty. It is advisable to warm the under sides of the glass before attempting the removal of the salt; the heat thus applied has the effect of loosening it from the glass, and enables the operator to

secure the salt in large, handsome scales. This remark is applicable to all of the scaled preparations of iron, and is of some practical utility.—*The Pharmacist, Chicago, March*, 1870.

METHOD OF PRESERVING DRUGS PERFECTLY DRY.

M. A. Melsens directs attention to the circumstance that dried leaves, roots, herbs, flowers, and other drugs are often kept in drawers or places in which they are imperfectly protected from humidity. In damp weather or moist situations such substances absorb an appreciable amount of moisture. As a consequence they are apt to deteriorate in quality, losing their color, acquiring a musty odor, or becoming mildewed. Even in establishments possessing a properly warmed store-room, it might, nevertheless, be of advantage to possess a simple means of preserving the contents of the shop-drawers in a state of perfect dryness.

The method which he suggests for this purpose is inexpensive and readily applied. It is to place a shallow sheet-iron tray, fitted with a cover of metallic gauze or muslin at the bottom of the drawer or box, which should also be furnished with a good tight-fitting lid. Fused carbonate of potash is placed in the tray, and the drugs allowed to rest on its porous cover. It is easy with this apparatus to effect the perfect desiccation of drugs; and substances possessing delicate odors which it is desired to preserve are better dried by this means than any other. Squills which have become damp and acquired an unpleasant smell, if placed in a box furnished with a tray of carbonate of potash, will in a short time lose their odor completely and become dry and brittle, so that they may be readily powdered. Rose leaves may be thus dried perfectly, their perfume being admirably preserved.

The author prefers fused carbonate of potash to chloride of calcium, quick-lime, or any other desiccating agent. In cases where the substance to be dried contains a great deal of water, it is necessary to change the carbonate of potash once or twice and re-fuse it.—*C. H. Wood, F.C.S., in Pharm. Jour., London, Dec.*, 1869.

ON THE ORGANIC MATTER OF HUMAN BREATH IN HEALTH AND DISEASE.

By Arthur Ransome, M.A.

The vapor of the breath was condensed in a large glass flask surrounded by ice and salt, by which a temperature several degrees below zero was obtained. The fluid collected was then analysed for free ammonia, urea and kindred substances; and for organic ammonia—the method employed being that invented by Messrs. Wanklyn and Chapman for water analysis.

The breath of eleven healthy persons and of 17 affected by different disorders was thus examined, and the results were given in two tables.

The persons examined were of different sexes and ages, and the time of the day at which the breath was condensed varied.

In both health and disease the free ammonia varied considerably, and the variation could not be connected with the time of the day, the fasting or full condition. Urea was sought for in fifteen instances—three healthy persons and twelve cases of disease—but it was only found in two cases of kidney disease, in one case of diphtheria, and a faint indication of its presence occurred in a female suffering from catarrh.

The quantity of ammonia, arising from the destruction of organic matter, also varied, possibly from the oxidation of albuminous particles by the process of respiration; but in healthy persons there was a remarkable uniformity in the total quantity of ammonia obtained by the process. Amongst adults the maximum quantity per 100 minims of fluid was 0·45 of a milligramme, and the minimum was 0·35.

A rough calculation was given of the total quantity of organic matter passing from the lungs in twenty-four hours—in adults about 3 grs. in 10 ozs. of aqueous vapor, a quantity small in itself, but sufficient to make this fluid highly decomposable, and ready to foster the growth of the germs of disease.

In disease there was much greater variation in the amount and kind of organic matter given off.

In three cases of catarrh, one of measles, and one of diphtheria, the total ammonia obtained was much less than in health—less than 0·2 of a milligramme—a result probably due to the abund-

ance of mucus in those complaints, by which the fine solid particles of the breath were entangled.

In two cases of whooping cough it was also deficient, but as they were both children, the lack of organic matter may have been due to their age.

In cases of consumption, also, the total ammonia was less than in health; but in one case of this disease associated with Bright's disease a large amount of organic matter was given off, a portion of it due to urea.

In kidney diseases the largest amount of organic matter of all kinds was found in the breath. The ammonia in one case of Bright's disease was 1·8 milligrammes in 100 minims of fluid, and urea was largely present. Perhaps this fact might be taken as an indication of the need of measures directed to increase the activity of other excretory organs.

In one case of ozœna or offensive breath the total quantity of ammonia obtained was greater than in any healthy subject, but the excess was chiefly due to organic matter.

One convalescent case of fever was examined, and the total ammonia was found to be deficient.

The air of a crowded railway carriage, after fifteen minutes occupation, was also tested by this method, and in about 2 cubic feet 0·3 milligrammes of ammonia and 3 milligrammes of organic matter were found.

With reference to the presence of organic matter in the atmosphere, it was pointed out that the subject was in no way a novel one, and that it had, during the last thirty years, been very fully investigated by many observers, more especially by Schwann, Dusch, Schroeder, Helmholtz, Van den Broeck, Pasteur and Pouchet, but it was shown that it is to Dr. Angus Smith that we owe the discovery of the readiness with which living organisms are formed in the condensed breath of crowded meetings, and the determination of the actual quantity of organic matter in the air of different localities.

Mr. Dancer's calculation of the number of spores contained in the air was noticed, but a source of error was pointed out in the readiness with which organisms are developed in suitable fluids,

even in the course of a few hours. Observations upon the organic particles of respired air had at different times been made by the author.

1. In 1857, glass plates covered with glycerin had been exposed in different places and examined microscopically. Amongst others, in the dome of the Borough Gaol, to which all the respired air in the building is conducted, organized particles from the lungs and various fibres were found in this air.

During a crowded meeting at the Free Trade Hall air from one of the boxes was drawn for two hours through distilled water, and the sediment examined after thirty-six hours. The following objects were noted:—Fibres, separate cellules, nucleated cells surrounded by granular matter, numerous epithelial scales from the lungs and skin.

3. The dust from the top of one of the pillars was also examined, and in addition to other objects, the same epithelial scales were detected.

4. Several of the specimens of fluid from the lungs were also searched with the microscope. In all of them epithelium in different stages of deterioration was abundantly present, but very few spores were found in any fresh specimen. On the other hand, after the fluid had been kept for a few hours, myriads of vibriones and many spores were found.

In a case of diphtheria, confervoid filaments were noticed, and in two other cases, one of measles and one of whooping cough, abundant specimens of a small-celled torula were found, and these were seen to increase in numbers for two days, after which they ceased to develope.

These differences in the nature of the bodies met with probably show some difference in the nature of the fluid given off; but it was pointed out that they afford no proof as yet of the germ theory of disease. They simply show the readiness with which aqueous vapor of the breath supports fermentation, and the dangers of bad ventilation, especially in hospitals.

Dr. E. Lund and Dr. H. Browne stated that they had also made experiments, the results of which were, in general, confirmatory of those obtained by Dr. Ransome.—*Chem. News, Lond., March* 18, 1870.

ON THE CULTIVATION OF CINCHONA PLANTS UNDER GLASS IN ENGLAND.

By John Eliot Howard, F.L.S.

Since first I had the satisfaction of raising the *C. officinalis* from seed sent me from the mountains of Uritusinga, I have devoted some attention to the cultivation of different species of cinchona under glass. This has extended over a period of about ten years, during the larger portion of which my experiments have been carried on in a conservatory which I had constructed for the purpose, and which, though on quite a limited scale, enables me to estimate what might be done by means of the appliances at the disposal of the directors of our botanic gardens. I have worked through a fair amount of mistakes and misfortunes, and have now about twenty different forms (species or varieties) of Cinchona in various stages of development; and of these, recently flowering, one plant of the *C. officinalis*,* one of the var. *Colorada del Ray*, and one very forward in bud of the (as yet undescribed) *C. Forbesiana*. I have also still in blossom a plant of the *Howardia Caracasensis* about ten feet in height, and covered with flowers for the last two or three months. Such a result, if exhibited to the whole pharmaceutical world, as it might be at Kew, could not fail to excite interest, and, moreover, the possession of living plants gives the opportunity of observing many things not apparent in dried specimens.

The facilities thus afforded for physiological investigation are also very important to those who delight to trace the beautiful contrivances and manifest design everywhere apparent in nature, and to whom well-observed facts are more interesting than mere mechanical theories of vegetation. As an instance, I was recently examining, together with a botanist well acquain-

*This plant was cut down, and the produce of sulph. quinine which I derived from it is recorded in my "Quinology of the East Indian Plantation," p. 3. It is now again grown up to a height of 8 feet 6 inches. Mr. Broughton has recently found, in five exceptionally fine trees, descendants of the sister of the above, 6·20 of purified alkaloids per cent.

Or sulphate of quinine (obtained crystallized) 3·46 per cent.
Sulphate of cinchonidin " 1·94 "
Also cinchonine.

ted with the *Cinchonæ* in their native woods, some beautiful trebly-scrobiculate leaves of my plants, and we agreed that inspection demonstrated the improbability of a theory recently advanced as regards the scrobiculation, which ascribes its origin to an inherited defect derived from the attacks of insects. The truth being, on the contrary (as I have often observed), that insects are not found to attack this part of the leaf in preference, but are much more addicted to some other portion of the plant. The additional beauty of the leaf derived from the scrobicules and their regularity must be seen to be appreciated, presenting an appearance quite unlike that of an accidental monstrosity.

As to the light to be thus thrown on botanical arrangement, I may mention the opportunity afforded of raising the seeds proceeding from the same bunch of capsules, and observing thus, as I am doing at the present moment, the amount of variation to be observed in the children of one parent plant.

The very difficulties to be overcome in imitating, as far as possible, the climate and soil of the mountain regions of the Andes, present many subjects of not unfruitful consideration.

The influence of light upon vegetation will force itself upon the attention in all the varied aspects of the question, as, indeed, presenting some of the most formidable difficulties in the cultivation of plants so sensitive as these are to the deficiency of stimulus in the dreary months of winter, and to the excess both of heat and light in our summer above that to which they have been accustomed. The effect of different colored rays, of polarized light, of a greater or less amount of actinism necessarily comes into view.

The leaves of many species are particularly sensitive to light, and turn towards the rays of the sun in a manner sufficiently remarkable. In some kinds the structure and coloring are very beautiful, and would quite repay cultivation, with this object in view. They are frequently covered with a lustrous epiderm, as described by Dr. Weddell, in reference to the *Calisaya*. This epiderm seems, as in the case of some other plants, largely composed of wax: when this is removed, either by mechanical injury or by chemical solvents, the leaf suffers, and the oxidation of the juices becomes manifest. It is not easy to imagine from

dried specimens, the great variety of structure and characteristic peculiarities which the leaves present; but when once well observed, the aspect of the plant fixes itself in the memory.

The respiration of plants, as affected by a too retentive soil or by too abundant application of water to the roots, has to be studied, and it is also necessary to mark the period of hibernation or repose, and to encourage rather than to interfere with rest at this period, a period which seems in India to be very accurately marked, and which even under glass, it is not difficult to trace.

Then the nutrition of the plants will require much care. It may, at first sight, seem requisite simply to provide the needed soil; and very pure sand, such as Reigate sand, rich loam, and bog earth, in proportions, varying according to the species,—when mixed, as I find desirable, with broken brick,—will sufficiently afford this. But there is more than this; for we shall find, if we study the plant, that it is desirable to supply it at the period of its most active vegetation with food ministered, as much as possible, in a liquid form, and therefore more easily assimilated. For as regards the life and growth of the plant, we may, in a certain sense, adopt the saying of Thales, that "all things are from water," for all things must be in solution (either aqueous or aerial) before they can be changed into the living substance of the vegetable. Now the natural solvent is rain as it falls from the clouds, and in the normal state (as observed by Weddell and Markham) of the *Cinchonæ*,* the roots spread superficially through a loose mass of earth and decaying vegetation, amidst which they absorb, together with the rain-water, various mineral substances, and also gases, especially carbonic acid, presented to the spongioles in the manner most to their advantage.

M. H. Struve† has recently demonstrated the existence, under certain conditions, of nitrite of ammonia, together with ozone and oxygenated water in rain and snow; and M. Deville has found in snow and rain, collected in the neighborhood of the

*The *C. succirubra* prefers a stronger soil, and, perhaps on this account, is more easy to cultivate than some others.

† "Journal de Pharmacie et de Chimie," November, 1869, p. 357.

hospice of St. Bernard, a similar composition, at least in so far as nitric acid and ammonia being present in greater or less quantities. I learn from Dr. Anderson that some species of cinchona flourish at Darjeeling, although the rainfall averages 127·30 inches for the year,* of which 82 inches fall in three months of the summer. But then the character of the soil and slope of the hills is such that the rain-water, after having bathed the roots, passes away immediately from them; for Dr. Anderson, as every one else, finds the Cinchonæ to be most impatient of water at the roots.

This is difficult to imitate, and the change consequent on the scarcity of rain-water to that derived from springs has (apparently) cost me the health of some valuable plants. Then, again, as the leaves can form chlorophyll only in sunshine, and can only *then* derive nourishment from the air, it must be remembered that, in dark and gloomy weather, we must supply less water and less nourishment to the roots, or the harmony of nature will be destroyed, and the consequences may be fatal. From the same considerations it will follow that too much artificial warmth in the night season will be injurious; and, indeed, the plants never seem to thrive better than when a considerable range of temperature between day and night is allowed to exist. I have found great practical benefit from adopting the system of *double glazing*, leaving a stratum of air about four inches in thickness between the sheets of glass. This tends greatly to prevent sudden chills, which are injurious, and also to retain a larger amount of moisture in the air surrounding the plants. This is much required and best secured by syringing the leaves with tepid water twice in the day, avoiding the collection of water around the roots. It is important to provide well for their drainage by means of broken bricks or tiles; and I find an advantage in conducting the warm water of the return pipes below the level surface of the ground, so as to secure a slight and constant elevation of the temperature. I have a thermometer plunged eighteen inches in the bed of earth in which my largest plants grow, and I have not noticed this below 50° F. in winter.

*Beardmore, "Manual of Hydrology," p. 330.

I think that the proper range of temperature might be placed at from 55° F. in winter to 65° in summer.

It is very important to allow as much access of fresh air as possible. It must be remembered that these are mountain plants, loving free air and alternate mist and sunshine, whilst the hot, close atmosphere of the lower valleys is always injurious to their perfection as quinine-producing plants, and generally fatal to their growth.* The very condition of *life* depends on the constituent molecules of an organized body being never all in repose; and whilst these are, on the one hand, received from without, on the other hand effete particles are continually expelled from the plant, whilst others are deposited in the formal tissues, thus building up gradually the solid portions of the structure. In this manner plants live, grow, multiply under the influence of the vital force; and if these phenomena were more constantly under the notice of our writers on Nature, we should perhaps be able nationally to elaborate something better than mechanical theories of life, force upon our acceptance with an amount of confidence bearing an inverse ratio to the proofs produced. We should, perhaps, not be told that "there is no real difference between vital and physical forces." Even the theory of cell-formation as the origin of all living things, though true as to the manner in which nature works, yet does not elucidate her mysteries. It seems to solve more than it really does explain, for what is the cell but the boundary within which nature carries on

*I have recently had the opportunity of observing the same result as produced by similar causes in India. Two specimens of red bark were sent over for analysis from "Balmadies," a cinchona plantation belonging to Mr. Rhode. One of these presented the usual appearance of East Indian *succirubra* bark. Mr. Broughton informs me that it was grown in a valley adjoining the Neilgherris, at an elevation of about 4000 feet. Mr. B. made an examination of it. Though actually lower in elevation than the site of the lower Crown barks on the Nediwuttum plantation, which produce much cinchonidine, it is tolerably rich in quinine. "The climate differs from these latter by this peculiarity, that during the dry season fogs and mists roll up each day from the western coast and moisten the leaves, and *shade* them from the baking Indian sun." The other specimen had the aspect of the *C. rubra dura* of the Germans, and contained less quinine, but more than twice as much cinchonidine. It came "from the hot bottom of the valley."

her operations?* and, after all, what are these? and what is life? Whoever watches the manner in which nature acts the ædile with her cells—("diruit, ædificat, mutat quadrata rotundis")—will think little of the cell itself, and much of that which it contains. If I take in my hands a brick, I have a specimen of material by which, through adding brick to brick, the four walls of a house may be constructed; but I should not be able thence to reason out the nature of the stirring active life which those boundary walls might contain. The addition of brick to brick might very well illustrate the phenomena of crystallization, but the activities of life within the plant much more resemble the course of reconstruction of a great city like Paris, in which an imperial will, availing itself of the all-arranging genius of a subordinate functionary, acts for the good of the whole, and, caring little for the four walls, or for any number of them, if standing in the way of its well-devised projects, adapts the materials even of previous structures to the exigencies of the new thing that has to be produced; and who will deny that the result is admirable?

It is thus that practical experience in cultivation leads to the review of theories which must be cast aside when they have served their turn, or demolished when they stand in the way of real *science*, which means *knowledge*, and not *speculation*.

In the address of the President I observe with pleasure the remark that "a country stroll of half an hour will yield material for thought and investigation available for many a day;" and may we not extend the application of the lines which he has quoted to the more difficult, but not less remunerative, objects of study presented by the cultivation of plants in circumstances so different to those of their native habitat? The very difficulties we encounter are a source of pleasure in overcoming them, and enable us to appreciate more fully that infinitely varied Wisdom which has appointed everything beautiful in its season, and all things in measure and number and weight. *No quid nimus* is a golden rule for every one that attempts to cultivate

*See "Chemismus der Pflanzenzelle," von Dr. H. Karsten. Wein, 1869, pp. 5, 6, etc.

the cinchonæ under glass. To neglect this would be to ensure failing in the undertaking.—*Pharmaceutical Journal, London, January*, 1870.

CHLORODYNE.

By Edward Smith, F.C.S.

Judging from the papers that have recently appeared in the "Pharmaceutical Journal," it would seem that there still exist great doubts as to the actual composition of this popular remedy.

There have been published two formulæ for the preparation of chlorodyne,—one known as Dr. Ogden's, and quoted by Royle in his "Materia Medica," the other to be found in Squire's "Companion," and two more distinct and divergent formulæ can hardly be conceived. It may be worth while, perhaps, to put them side by side.

Dr. Ogden's (Royle).	Squire's (Companion).
℞ Æther. Chlor. ʒj	℞ Chloroform ℥iv
Chloroform ʒvj	Æther ℥j
Tinct. Capsici ʒss	Sp. V. Rect. ℥iv
Ol. Menth. Pip. gtt. ij	Theriacæ ℥iv
Morph. Mur. gr. viij	Ext. Glycyrrh. ℥iiss
Acid. Perchlor. gtt. xx	Morph. Mur. gr. viij
Tinct. Cannab. Ind. ʒj	Ol. Menth. Pip. ♏ xvj
Theriacæ ʒj	Syrupi ℥xviiss
Acid. Hydrocy. Scheele ♏ xij.	Acid. Hydrocy. dil. ℥ij.

Dr. Ogden, I believe, published his formula as resulting from analysis, and Squire says his formula has been represented to him as the true one; it is plain, however, either that Dr. Ogden's analysis is worthless, or that Squire's information is derived from unreliable sources. Dr. Ogden gives the amount of morphia as eight grains in about nine drachms; Squire gives it as eight grains in about thirty-five ounces! The proportion of chloro form, too, differs enormously. In the first it amounts to about two-thirds, in the latter to about one-eighth. Dr. Ogden says nothing of ext. glycyrrh., syrup, sp. v. rect., or ether, and on

the other hand, Squire omits all mention of acid. perchlor., tinct. cannabis, or capsicum.

I have not met with the particulars of Dr. Ogden's so-called analysis, and in truth I am very much inclined to doubt if any *chemical* analysis has been attempted, as the formula bears the impress of improbability on the face of it, *i. e.*, supposing that Collis Browne's chlorodyne be intended; for instance the dose of the latter as marked on the label is from ten to thirty drops; now this would contain, if Dr. Ogden is right, from seven to twenty drops of chloroform, a dose which very few practitioners would care to venture upon, particularly as it is to be repeated at certain intervals, and in combination with from a sixth to half a grain of morphia per dose. I rather suspect that Dr. Ogden's analysis has had more of a physical character attached to it, the organs of taste and smell having perhaps greatly assisted the supplimentary chemical tests.

The dose of chloroform in Squire's is not unreasonable; but that of morphia, viz. the 1·200th to the 1·70th of a grain, is palpably absurd, and so homœopathic that it might practically be omitted from the compound. The only conclusion fairly deducible from a comparison of the two formulæ is, that neither of them can be said to represent the well-known Browne's chlorodyne.

The results of an examination I have recently made of the genuine compound may not be uninteresting to pharmacists.

The positive detection and isolation of the alkaloids in complex organic mixtures is not always a very easy task, more especially when they exist in small proportions. I started with the intention of simply satisfying myself of the presence or absence of morphia; however, the examination gradually developed itself, and ultimately I managed to make out with tolerable precision what I believe to be the actual composition of this preparation.

Genuine chlorodyne has a sp. gr. of 1·216, and reddens blue litmus paper. Distilled over a water-bath, it yields an opaque distillate, evidently a mixture of two or more fluids; on the addition of an equal volume of water, the distillate separates into three distinct layers. The upper one has an ethereal

pepperminty odor and taste, and is in fact oil of peppermint dissolved in ether. The ether may be recognized by the ready inflammability of its vapor.

The middle layer, separated by a pipette and gently heated with a few drops of hydrochloric acid and potassium chromate, gradually assumes a green coloration, owing to the reduction of the chromate, and indicating the presence of alcohol—a tincture probably. The odor of hydrocyanic acid is given off during the heating. This layer also gives a precipitate with silver nitrate, insoluble in nitric acid and sparingly soluble in ammonia, revealing hydrocyanic acid.*

The lowest layer, heated gently with caustic potash, yields with silver nitrate a precipitate insoluble in nitric acid, and which blackens by the further application of heat, owing to the reduction of the silver formiate, indicating the presence of chloroform.

The residue in the retort, consisting of a dark, semifluid paste, dissolves in water, and has a very pungent, peppery taste of capsicum. This aqueous solution gives a precipitate with alcohol, basic plumbic acetate, and ammonium oxalate, revealing the presence of gum, and also gives the usual glucose reaction with the potassio-cupric tartrate. The non-volatile alkaloids would of course be found in the residue in the retort after distillation, but the coloring matter adheres to its solution in water, etc., with such pertinacity as to render the usual tests very unreliable, and therefore a fresh sample of the original compound is required, to satisfactorily determine their presence.

The following is the plan I adopted to isolate the alkaloids:—

Digest the chlorodyne with twice its volume in alcohol, containing a few drops of acetic acid at a warm temperature, say 50° to 60° C. for four or five hours, occasionally shaking the mixture. The whole of the gum and much of the coloring matter

* In the preliminary examination of complex organic mixture for hydrocyanic acid, Schönbein's guaiaco cupric test promises to be useful. Thus, the presence of hydrocyanic acid in chlorodyne may be determined in a few seconds by this test. It must be borne in mind that *free* nitric acid and chlorine give the same reaction, but not their compounds, neither do acetic, hydrochloric, sulphuric, or phosphoric acids.

are thus precipitated. After filtration, the alcoholic solution is gently evaporated until it thickens, being careful not to push the evaporation too far, as the glucose in the solution very soon blackens. To this semi-liquid extract is added water, and the whole gently heated with a solution of potassium bicarbonate, containing a little caustic potash, and set aside to deposit.

This precipitate of alkaloids is separated by filtration and digested with ether, until nothing more is dissolved. All the alkaloids likely to be present in chlorodyne, such as atropia, are soluble in ether, with the exception of morphia, which remains undissolved. The residue, insoluble in ether, is treated with acetic ether, in which it speedily dissolves. A small portion of the ether solution undergoes no change on the addition of potassic iodomercuride solution, but by evaporation yields a very minute residue, which has an intensely pungent and burning taste, being evidently impure capsicine. All my attempts to obtain evidence of the presence of atropia failed.

The acetic ether solution gives a copious precipitate on the addition of potassic iodomercuride solution, and by evaporation yields microscopic crystals, which, on the addition of a few drops of acidulated water, give the usual morphia reactions with nitric acid and neutral ferric chloride, thus satisfactorily demonstating the presence of morphia.

From the above it will be seen that chlorodyne consists essentially of chloroform, morphia, ether, hydrocyanic acid, and capsicum, with the addition of gum and treacle as vehicles, and oil of peppermint as a flavoring ingredient. Tincture of Indian hemp does not appear to be present, as the alcoholic extract is soluble in water.

The quantitative estimation of the several component parts of chlorodyne is in some respects a very tedious process, but it may be roughly made as follows:—The chloroform by distilling a known quantity, and adding to the distillate a given volume of water,—the chloroform is thus isolated, and, if a graduated measure be used, its volume at once read of; at the same time the amount of spirit, plus hydrocyanic acid, may be noted, and the oil of peppermint, plus ether, which floats on the surface. If the hydrocyanic acid be now estimated by precipitating with a

known weight of silver nitrate, the amount of spirit is a simple matter of calculation.

The gum readily separates on the addition of alcohol, and may be washed, dried, and weighed, or a known volume of water added to the precipitate, in which it speedily dissolves, the increase in volume will approximately give the amount of gum. The capsicum does not exist in sufficient quantity to admit of measurement.

The morphia may be estimated by evaporating the acetic ether solution to dryness, dissolving in water slightly acidulated with acetic acid, and cautiously neutralizing with caustic potash (being careful to avoid excess, which redissolves the precipitated morphia), filtering and weighing. It is necessary to operate upon at least four ounces of chlorodyne to arrive at anything like satisfactory results. The potassic iodomercuride solution precipitates morphia from its solutions, but unfortunately the reaction is not sufficiently reliable to employ it as a quantitative test. The amount of treacle may be estimated pretty closely by calculation after all the ingredients have been accounted for.

The composition of chlorodyne, then, I put as follows:—

℞	Chloroformi . . .	f. ʒiv
	Morphiæ Mur. . .	gr. xx
	Æther. Rectif. . .	f. ʒij
	Ol. M. Pip. . . .	♏ viij
	Acid. Hydrocy. Dil.	f. ʒiv
	Tinct. Capsici . .	f. ʒvj
	Mist. Acaciæ. . .	f. ℥j
	Theriacæ. . . ad	f. ℥iv.

Misce.

This does not give so dark a compound as the original, because the latter contains caramel, but as this has no medicinal or other value, I have omitted it, making up to the required volume with the treacle.

In conclusion, I would suggest to those who care to use this formula, that it be known and prescribed as "liquor chloromorphiæ comp.," which explains sufficiently well its essential constituents, and is a name which cannot be confused with any advertised or quack compounds.—*Ph. Jour., Lond., Jan.*, 1870.

THE PREPARATION OF SOAP FOR SOAP LINIMENT.

By C. H. Wood, F.C.S.

The process given in the British Pharmacopœia for the preparation of linimentum saponis is, I believe, founded upon the results of some experiments communicated to the Society by Mr. Deane in 1859. Mr. Deane found that when good Castile soap is macerated in the spirit at a temperature below 70° F., the oleate of soda dissolves, while the margarate of soda remains to a great extent insoluble, and the resulting solution does not lose its limpidity by the application of moderate cold. If, on the contrary, the whole of the soap be dissolved by digestion with heat, the liniment gelatinizes on a reduction of temperature. From this it follows that good soap liniment should consist of a solution of oleate of soda, as free as possible from the alkaline margarate or stearate. Hence Castile soap, which is prepared from olive oil, is the only commercial soap adapted to the purpose, the other soaps being made from solid fats, and containing a much smaller proportion of the oleate. Mr. Squire mentions in his book an experiment indicating that white Castile soap is soluble to the extent of 80 per cent. in cold rectified spirit. This is the soap described in the Pharmacopœia, and I have no doubt that if the process there given for preparing the liniment be carefully followed, it yields a sufficiently satisfactory result. Nevertheless, if a soap could be obtained containing a still larger proportion of the soluble constituent, it would doubtless be preferred. For some time past I have prepared such a soap for myself by a very ready method, and have found it to possess considerable advantages.

To produce a soap as rich as possible in oleate of soda, an oil should be selected containing the largest proportion of olein and the smallest quantity of solidifiable constituents. Almond oil is therefore better suited for the purpose than olive oil, and it is from this material that I obtain my product.

The saponification of oil as commonly performed is a protracted and somewhat tedious process to conduct on the small scale. For this reason, probably, chemists are not in the habit of preparing their own soap. But if, instead of boiling the oil and

alkali together until they unite, the oil be first treated in the cold with $\frac{1}{20}$th of its weight of strong sulphuric acid and allowed to remain for twenty-four hours, it is rendered so soluble in liq. sodæ that its conversion into soap becomes a matter of the utmost facility. Adopting this plan, I have found the process to be one of the easiest of pharmaceutical operations. The acid mixes freely with the oil, forming a blackish-colored fluid. On the addition of the soda this color entirely disappears, and the soap obtained is quite white. The following is the method of procedure I have found to be the most convenient:—

Almond oil	1¼ pound (av.),
Sulphuric acid	1 ounce (weight),
Liq. sodæ	10 pints (Imp.)

Add the acid to the oil, stirring the mixture. Allow this to remain for twenty-four hours. Then pour it into the liq. sodæ contained in a clean iron vessel, and apply heat. Very shortly after it boils, the liquid becomes perfectly bright and transparent; the fire is then removed, and the whole allowed to become perfectly cold. The soap is then found as a coherent cake floating on the top of the liquor. It is laid on a calico filter, and left to drain for several hours; or, if it is desired to obtain it perfectly free from all traces of caustic alkali, it may be redissolved in 10 pints of boiling water, and a strong solution of 5 oz. of common salt added. As the mixture cools, the soap rises to the surface; and when quite cold, again forms a fine layer, resting on the aqueous liquid. No loss of weight is thus incurred. The soap is placed on calico to drain, after which it may be submitted to moderate pressure, or melted in a tared dish, and reduced to a uniform weight of 2½ pounds. When thoroughly cold, it forms a firm white soap, which may be cut into pieces, and kept for use in a covered pot.

In the preparation of linimentum saponis, this soap is macerated in the spirit in the cold. It very quickly dissolves, especially if the mixture be agitated. From 4 to 5 per cent. of the weight of the soap remains insoluble, as a flocculent deposit. After this is filtered out, a pale liniment is obtained, which may be kept at 32° F. for any length of time without thickening or depositing. The Pharmacopœia does not direct the soap to be

dried before use. Fresh soap usually contains from 30 to 40 per cent. of water, and I think it best to employ it in this moist condition.

Soap may be quite as readily made from olive oil by the foregoing method, but I think the use of almond oil will be found to present several important advantages. Although the latter is the dearer material, it does not sensibly affect the cost of the liniment, because the soap is to a greater extent soluble; consequently, the quantity of product is increased, and the proportion of spirit retained in the undissolved matter is saved.—*Pharm. Jour., London, January*, 1870.

NOTE.—The high price of oil of almonds in this country will preclude the use of that oil in the preparation of an extemporaneous soap. The use of the sulphuric acid is to destroy or separate the glycerin as sulphoglyceric acid when the saponification of the oily acids is more easily effected. It is suggested, as a more appropriate method when it is desired to get a soap liniment consisting mainly of oleate of soda soap, that the ordinary white Castile soap be dissolved in the alcohol in such excess that the less soluble margarate of soda may crystallize out by careful cooling, separated on a cloth and expressed, and thus prevent the annoyance arising from change of temperature in winter.—EDITOR AMER. JOURNAL PHARMACY.

MEDICINAL DRAGEES AND GRANULES.

BY ERNEST AGNEW.

The large extension given to this agreeable form of pill, and its adaptability to a host of substances usually administered in that manner, necessitate a few remarks on their manufacture, more especially as in England they seem to be less employed or less appreciated than in America or on the Continent, where it is usual to keep genuine *dragées* of various strengths, ranging from one grain to five of rhubarb, aloes, and various other simple and compound pills, sugar-coated; an advantage apparently much appreciated by customers, who rarely fail to renew a request for the same. The method adopted in their manufacture is one of admirable simplicity, but succeeds best on a large scale, unfortunately preventing its use for the general work of a dispensing counter. But the numerous special pills constituting

the "patent," or leading article of nearly every pharmacist, can be made quicker, better and more advantageously than by the ordinary method, even where aided by machinery. The ingredients for the pills should be thoroughly mixed and sifted, so as to form a fine, impalpable powder. With some substances of an untenacious character it is necessary to add a little dextrine, sugar, or gum. The sugar granules forming the nuclei of the pills are either to be bought from the wholesale confectioners under the name of *nonpareils*, or are easily made by agitating and rubbing together coarsely sifted sugar and syrup in a large copper basin over a slow charcoal fire.

The granules, weighing each about one-tenth of a grain, are measured out so as to furnish the requisite number of pills, and are introduced into a large copper basin suspended by two ropes from a bar of wood, capable of revolving horizontally on an iron bolt fixed in the ceiling. A small charcoal fire is lit in an open pan under the basin, and serves also to keep warm a quantity of syrup, with which the granules are moistened from time to time, and continually rubbed and agitated with a little of the powder, added very gradually, the basin being rapidly rotated, and jerked upwards occasionally. This operation, which must be repeated an indefinite number of times, until the *dragées* are completed, requires considerable skill on the part of the manipulator, for if too much of the excipient be added at once, it dissolves the previous *couche*, and prevents the regular formation of the concentric layers of which each *dragée* is built up, much in the same manner as starch granules are by some supposed to be formed. The final coating with sugar is the least difficult part of the operation, and is done either with syrup alone, or with the addition of a little plaster of Paris, very brisk agitation being required, so as to avoid any agglomeration of the *dragées*, the temperature being so regulated as to dry the sugar without a possibility of melting it. Or, in the case of certain pills, where sugar-coating is undesirable, owing to its discoloration by the ingredients of the kernel, such as in pills of iodide of iron, etc., copal and balsam of tolu dissolved in ether forms an excellent coating, easy of application, and effective in results.

The advantages of making large quantities of pills by this

process may be briefly summed up: firstly, the rapidity with which they are made, a clever workman easily making a batch of 100,000 pills in a day and a half; secondly, their uniform roundness and pleasant appearance contrasted with that of ordinary pills; thirdly, their compactness and hermetic enclosure, which insures their keeping without change, and at the same time allows of their easy solution in the stomach, envelope and excipient being both perfectly soluble.

Granules containing 1 milligramme of powerful medicines, such as arsenious acid, sodic arseniate, digitaline, aconitine, etc., are much prescribed by continental physicians, especially in Italy; and where a regular or gradually increasing dose of any such medicine is required, no system so completely fulfils the prescriber's intentions, combined with so little inconvenience to the patient. In making these granules, the active ingredient is usually dissolved in the syrup, the bulk being merely powdered sugar. Thus in making 10,000 granules of sodic arseniate, dissolve in 500 grammes of syrup 10 grammes of the arseniate, with which gradually moisten the granules, the operator rubbing and agitating them the whole time to prevent their adhesion.

Leptandrin, assafœtida, and many other nauseous substances, are commonly encased in sugar by our American *confrères*, who certainly display much ingenuity in the manner in which they cater for public patronage, some of their convenient inventions having become quite indispensable to the upper class of that country. At the works established at St. Denis by M. Menier, and now belonging to the Pharmacie Centrale of France, the *dragées* and granules are made by steam-machinery, and the rapidity of the operation is increased by a blast of warm air driven upon the basin, which revolves eccentrically, rendering it almost impossible for the granules to adhere to each other. Sugar-coated semen-contra is also much used as a pleasant remedy for worms in children, their resemblance to caraway comfits conducing much to their easy administration. But here we are trenching on the domains of the confectioner, from whom many a lesson is to be learnt in the art of rendering nice and attractive much which is in the crude state, to say the least, disgusting and repulsive.—*Lond. Pharm. Journ.*, *March*, 1870. *Paris.*

ASSAY OF COMMERCIAL ACETIC ACID.

By M. Gaston Tissandier.

Acetic acid, sometimes called, in commerce, pyroligneous acid, generally contains about 40 per cent. of acetic acid, $C_4H_4O_4$; it is sold by the acidimetric standard, which is determined by means of a titrated alkaline liquid.

Acidimetric Standard.—Preparation of the Alkaline Liquid.—We have already shown how the alkalimetric sulphuric acid may be prepared accurately; this well-verified solution, containing 100 grms. of sulphuric acid per litre, is the basis of the preparation of the alkalimetric liquid which, in laboratories, is used to effect nitrogen determinations or to take acidimetric standards.

Any quantity whatever of pure caustic soda—15 or 18 grms., for instance—is dissolved in a litre of water. 10 centimetres of the normal sulphuric acid liquor (containing 1 grm. of SO_3HO) are taken and poured into a small precipitating glass; to this is added some sensitive tincture of litmus, and the solution of caustic soda poured into it drop by drop by means of a graduated burette, divided into tenths of c.c., till the red litmus becomes blue—that is to say, till the acid is saturated. Let us suppose that 50 c.c., or 500 divisions, of our alkaline solution are required to saturate 10 c.c. of the titrated sulphuric acid liquid. We know that 500 divisions saturate 1 grm. of sulphuric acid, and we can calculate, according to the equivalents, what quantity of acetic acid will saturate a certain volume of our liquid; we know, for example, that 500 divisions ought to saturate 1·224 grms. of acetic acid, $C_4H_4O_4$:—in fact, $\frac{49\,(SO_3,HO)}{60\,(C_4H_4O_4)} = \frac{1.}{x}$

Before thus standardizing the alkaline liquor of caustic soda, it is well to add some slaked lime, to prevent it from carbonating, which would interfere with the sharpness of the coloration of the red litmus into blue. Before using this liquor, the bottle which contains it is shaken, and left to settle, so that the lime may be deposited at the bottom; the solution, becoming clear in a few minutes, is then poured into the graduated burette, which is used to take the standard of pyroligneous acid under assay.

According to arrangements between the buyer and seller, the standard of this acid is taken either by *volume* or by *weight*. In the former case 1 c.c. of acetic acid is saturated, in the latter 1 grm.

In order to take the standard by weight, a small glass, containing in it a 10-grm. weight, is tared on a sensitive balance. Equilibrium being established, the 10-grm. weight is taken out, and the acetic acid to be tested is then gradually poured into the glass by means of a small tube, so as to regain the equilibrium. We have thus, by double weighing, obtained 10 grms. of acetic acid, which are to be diluted with water so as to give a volume of 100 c.c.

After this solution has been rendered homogeneous by shaking, 10 centimetres of it are removed, corresponding to 1 grm. of acetic acid. Instead of directly weighing 1 grm. of the acid to be tested, it is better to weigh 10 grms. of it, as we have indicated; because, in case of a verification being needed, it is easier to measure 10 c.c. than to commence a fresh weighing.

The 10 centimetres deducted are placed in a precipitating jar, litmus is added, and the alkaline soda liquid poured in, drop by drop, till the litmus becomes clearly blue. If 150 divisions have been used, we shall obtain the acidimetric standard of pyroligeneous acid by the following equation—

500 divisions saturate . . 1·224 grs. of $C_4H_4O_4$
150 " will saturate . . x.

whence—

$$x = 0{\cdot}3672.$$

100 grms. of the assayed acetic acid contain, then, 36·72 grms. of $C_4H_4O_4$, which is expressed by saying that its standard is 36·72°.

When the standard is taken by volume the operation is the same; only, instead of weighing 10 grms. of the acid, 10 c.c. are measured.

Examination for Mineral Acids—Acetic acids are sometimes adulterated with mineral acids (chlorhydric and sulphuric, &c.), which augment their standard.

To detect their presence, 50 c.c. of acetic acid are heated to the boiling-point with 1 or 2 centigrms. of starch, and left to

boil about twenty minutes. When the liquid has become cold, some drops of tincture of iodine are poured into it. If a blue coloration of iodide of starch occurs, the acetic acid contains no mineral acids; but if this coloration is not produced, we may be certain of the presence of mineral acids, which, under the action of heat, have transformed the starch into dextrine, and thus prevented the formation of the iodide. Care must be taken to pour the iodine into the cold liquid, for iodide of starch is decolorized spontaneously under the action of heat. Chlorhydric acid may also be immediately detected by adding to the acetic acid a few drops of nitrate of silver; and the presence of sulphuric acid is discovered by chloride of barium. In the latter case, it must not be forgotten that chloride of barium is insoluble in acids, and that the acetic acid ought to be diluted with a sufficiently large quantity of water to avoid the possibility of error from this cause.

Pyroligneous acids generally standardize 39° to 40°; however, this figure is not absolute. We have sometimes met with samples containing only 34 per cent. of acetic acid, others having 46 to 50 per cent., and even still larger quantities.—*Chem. News, Lond., Jan.* 21, 1870.

Minutes of the Philadelphia College of Pharmacy.

A stated meeting of the College was held at the College Building, December 27th, 1869; the President, Dillwyn Parrish, presiding. [This was the first meeting under the revised By-laws, making the meetings of the College quarterly in place of semi-annually as heretofore.]

The minutes of the last stated meeting and all of the several adjourned meetings were read and approved. The minutes of the Board of Trustees being read by the Secretary of the Board, inform that Louis G. Bauer, C. F. Gristock, Clemmons Parrish, Andrew C. Blair, Henry C. Eddy, James S. Robinson, Geo. W. Kennedy, W. G. Buchanan, Samuel Campbell, Louis A. Baker, Wm. McIntyre, Henry K. Bowman, M. G. Rosengarten and Jos. R. Dugan were elected active members of the College. Also that at a meeting of the Board on the 5th of October the following gentlemen were elected corresponding members of the College, viz.:

Great Britain.—Prof. John Attfield, London; Henry B. Brady, New Castle-on-Tyne; John Abraham, Liverpool; T. B. Groves, Weymouth; Chas. Tichbourne, Dublin; F. Crace Calvert, Manchester; John Mackay, Edinburgh; W. W. Stoddart, Bristol; J. C. Brough of London.

Germany.—Dr. H. Ludwig, Jena; Dr. L. A. Buchner, Munich: Dr. J. B. Henkel, Tübingen; Dr. Rieckher, Marbach; Albert Frickhinger, Nördlingen; A. Margraff, Berlin; Dr. Carl Schacht, Berlin; Dr. Franz Beckert,* Vienna; Anton von Waldheim, Vienna; Dr. Clamor Marquart, Bonn.

Switzerland.—Dr. J. J. Bernoully, Basel; A. Gruner, Bern; L. Ladé, Geneva.

France.—Augustine Delondre, Sevres; Prof. L. R. Le Canu, Paris; Dr. J. Leon Soubeiran, Paris; M. Stanislaus Martin, Paris; M. S. Robinet,† Paris; M. François L. M. Dorvault, Paris; M. A. Gobley, Paris; Prof. A. Chevallier, Paris; M. Paul Antoine Cap, Paris; Prof. —— Planchon, Paris.

Netherlands.— M. Walter, Amsterdam.

Belgium.—Dr. A. Von Bastelaer, Charleroi; Prof. Norbert Gille, Brussels.

Prussia.—Dr. G. Dragendorff, Dorpat; Dr. Arthur Casselman, St. Petersburg; Dr. Bjoerklund, St. Petersburg.

Italy.—Louis Mosca, Turin; Nicholas Sinimberghi, Rome.

Egypt.—Dr. Gastinel, Cairo.

Brazil.—Dr. Theodore Pecholt, Cantagallo.

The Committee on Sinking Fund report the collection of $55, and an additional subscription of $50 to the Building Fund. The Treasurer of the late Building Committee informed that there was to his credit as Treasurer, interest amounting to $113.60.

A. B. Taylor made a verbal report for the Committee appointed to confer with the Committee of the different medical societies on the subject of legislation to prevent adulteration in drugs and medicinal preparations. The Joint Committee, after a number of sessions and free conference on the merits of proposed measures, designed to effect the purpose desired, finally concluded to recommend to the several bodies represented in the Committee the draft of the law proposed and considered by the American Pharmaceutical Association, as embodying a better plan than any other which has been brought to their notice for the suppression of adulteration and sophistication of drugs and medicines.

CHAS. BULLOCK,
Secretary.

March 17, 1870.

A special meeting of the College was held for the purpose of electing delegates to the Convention for revision of the U. S. Pharmacopœia, to assemble in Washington in May next. Nominations having been made, the following gentlemen were elected to represent this College in the convention, viz.: Wm. Procter, Jr., Prof. John M. Maisch, Alfred B. Taylor.

CHARLES BULLOCK, *Secretary.*

* Died March 5th, 1870, at Vienna.

† Died December 6th, 1869.

March 28, 1870.

The Annual Meeting of the College was held at the College Building. The President, Dillwyn Parrish, Presiding. The minutes of last stated meeting and of special meeting were read and approved.

The minutes of the Board of Trustees were read by A. B. Taylor, Secretary of the Board, and on motion approved. These minutes inform that, at the Annual Commencement of the College held March 22d, at the Academy of Music, the diploma of the College was conferred by President Dillwyn Parrish, on 51 graduates, whose names and theses are as follows:

LOUIS W. ADAMS, Philadelphia, Pa.....*Pepsin.*
GEORGE W. BARTON, Philadelphia, Pa.....*Physiology of Plants.*
JOHN M. BRENNAN, Philadelphia, Pa.....*Percolation.*
MILTON G. BRIGGS, Philadelphia, Pa.....*Heuchera Americana.*
EDWARD CHILES, Frankfort, Ky.....*Spiritus Frumenti.*
SILAS B. CLARK, Vermont.....*The Country Drug Store.*
WM. C. CONNALLY, Atlanta, Ga.....*The proposed Law for the practice of Pharmacy.*
HENRY H. DINNING, New York.....*Cimicifuga Racemosa.*
BENTON G. DOSCH, Chambersburg, Pa.....*Pepo and Vallet's Mass.*
WILL. RUSH EHLER, Lancaster, Pa.....*Filtration.*
CHARLES L. FINCH, Philadelphia, Pa.....*Treatment of Poisons.*
A. F. GERHARD, Philadelphia Pa.....*Socotrine and Cape Aloes.*
C. L. GROFF, Philadelphia, Pa.....*On Tinctures.*
G. OMAR GUY, Chicago, Ill.....*Sulphocarbolic acid and the Sulphocarbolates.*
JOSEPH J. HALL, Nashville, Tenn.....*Analysis of Squire's Citrate of Magnesia.*
WM. H. HANCKER, Philadelphia, Pa.....*Cannabis Indica.*
JOHN B. HANNAMAN, Philadelphia, Pa.....*The Root of Baptisia Tinctoria.*
S. E. R. HASSINGER, Philadelphia, Pa.....*Ilex Verticillata.*
LLEWELLYN HELFRICH, Philada., Pa.....*Black Alder.*
EUGENE HERBERT, Philadelphia, Pa.....*Carbolic Acid.*
LOUIS W. HILDENBRAND, Philada., Pa.....*Coptis Trifolia.*
JOHN F. HUDDART, Louisville, Ky.....*A plea for the more general use of Fluid Extracts.*
THOMAS HUNTER, Philadelphia, Pa.....*Ceratum Plumbi Subacetatis.*
OTWAY E. HUTCHINGS, New Orleans, La..*The number of drops to a fluid drachm.*
HARRY R. KERVEY, West Chester, Pa.....*The Life of a Drug Clerk.*
JOSEPH J. KIRKBRIDE, Philada., Pa.....*Arsenicum.*
CHARLES S. LEE, Bridgeton, N. J.....*A first class Drug Store.*
WALTER LEHMAN, Philadelphia, Pa.....*Podophyllum.*
THOMAS J. LIGHTCAPP, Allentown, Pa.....*Chloral and its Hydrate.*
SAMUEL LOTT, Philadelphia, Pa.....*Lycopus Virginicus.*
ED. H. LUCKENBACH, Bethlehem, Pa.....*Euonymus Atropurpureus.*
JOHN T. McLAUGHLIN, Peoria, Ill.....*Angelica Atropurpurea.*
HENRY A. NEWBOLD, Philadelphia, Pa.....*Glycyrrhiza Glabra.*
JAMES J. OTTINGER, Mount Holly, N. J....
DANIEL J. PATTON, Burlington, N. J.....*Euphorbia Ipecacuanha.*
ROBERT F. RANKIN, Bellefonte, Pa.....*Cassia Marilandica.*
EUGENE A. RAU, Bethelehem, Pa.....*Catalpa Bignonioides.*
HARRY D. SCHELL, Philadelphia, Pa.....*Convolvulus Panduratus.*
HENRY SCHMIDT, Philadelphia, Pa.....*Pimpinella Anisum.*
LEWIS F. SEGREST, Philadelphia, Pa.....*Rubus Villosus.*
C. F. SHOEMAKER, Philadelphia, Pa.....*On Patent Medicines.*
WALTER C. STILLWELL, Philada., Pa.....*Pix Liquida.*
CHARLES F. STRETGH, Salem, N. J.....*The importance of System.*
J. L. SUPPLE, Philadelphia, Pa.....
LEOPOLDO TOMASSEVICH, St. Jago, Cuba..*Pharmacy as one of the Learned Professions.*
JOHN TULL, Philadelphia, Pa.....*Granular Preparations.*
D H. TURNER, Towanda, Pa.....*The early closing of Drug Stores.*

A. B. WENRICH, Myerstown, Pa.....*Pharmacy vs. Vox Populi.*
J. ALEX. WILHELM, York, Pa.....*A Cholagogue tincture of Gentian.*
J. L. WILLIAMSON, Bethlehem, Pa.....*Rennet and its Preparations.*
SAMUEL P. WRIGHT, Smyrna, Del.....*Suppositories.*

The report of the Committee of Conference with the medical societies was read and accepted, and the Committee discharged.

To the President of the Philadelphia College of Pharmacy.

SIR:—At a meeting of the Joint Committee of physicians and pharmaceutists appointed to consider the subject of Legislation in reference to the adulteration and deterioration of drugs, held at the Hall of the College of Physicians last evening (29th inst.), the Secretary was directed to transmit to the Chairman of each Society represented in the Joint Committee a copy of the following resolutions, together with a copy of the "Draft of a proposed Law" therein referred to:

"*Resolved*, That the Joint Committee appointed by the College of Physicians, the State Medical Society, the County Medical Society, and the College of Pharmacy, respectfully advise the several bodies which they represent that, in their opinion, the draft of a law proposed and considered by the American Pharmaceutical Association embodies a better plan than any other which has been brought to their notice for the suppression of adulteration and sophistication of drugs and medicines."

"*Resolved*, That the expression of opinion of the Joint Committee in the resolution just adopted, refers exclusively to those sections of the 'Draft of a Proposed Law' which relate to the adulteration and sophistication of drugs and medicines.

The above resolutions are extracted from the minutes, and were adopted by the Joint Committee as their final action in reference to the subject under consideration, after which the Committee adjourned 'sine die.'

ALFRED B. TAYLOR,
Secretary of the Joint Committee.

Philadelphia, Dec. 30th, 1869.

Prof. Joseph Carson, M.D., was elected an honorary member, and Charles Bauer an active member of the College.

The Treasurer of the late Building Committee was directed to pay the balance to his credit to the Chairman of the Sinking Fund Committee.

The reports of Committee on revision of the Pharmacopœia, of Publication Committee and of the Committee on Latin Labels were read and accepted.

To the Philadelphia College of Pharmacy:

The Committee appointed by the College on the Revision of the United States Pharmacopœia respectfully report—

That shortly after their appointment the committee met for organization, when the general committee was divided into sub-committees, each consisting of three members. The different parts of the Pharmacopœia were apportioned amongst these committees for consideration and report. The various sub-committees have, from time to time, reported to the general committee, when their reports have been discussed and amended, and either rejected or adopted.

The subject of weights and measures has been considered, and various propositions brought forward. It has been proposed to use avoirdupois instead of troy weight. The French system of decimal weights and

measures has been proposed, and also the scheme of using parts instead of weights or measures. No change has, however, been recommended by the committee.

The committee have recommended the introduction of various new preparations, and the abandonment of some that are now officinal. Among those introduced are various chemical substances, extracts, solid and fluid; lozenges, ointments and suppositories. Some of the preparations now officinal have been transferred to the "list," among which may be specified "ether," "sulphate of cinchonia," "sulphate of quinia," "santonin" and "valerianic acid"

Improvements have been made in formulas, new tests have been introduced, and many minor changes have been made, with the view of explaining or improving processes that were difficult or unsatisfactory.

The committee are unable, at the present time, to hand in a complete report, since there are in the charge of the different sub-committees various unfinished reports; and we would, therefore, respectfully ask that our report might be adopted, and the committee be authorized to add to it such matters as they may deem proper, so as to have it completed in time for presentation to the Pharmacopœia Convention, which will meet in Washington, in May next.

ALFRED B. TAYLOR,
Chairman of Committee.

March 28th, 1870.

The Committee on Sinking Fund reported receipts to the amount of $2,669, and that they had paid interest on mortgage of $150, and on account of principal of mortgage of $2,500, leaving in their hands $19.

The annual election for officers being ordered, the following were elected:

President,	Dillwyn Parrish.
1st Vice-President,	William Procter, Jr.
2d Vice-President,	Robert Shoemaker.
Recording Secretary,	Charles Bullock.
Corresponding Secretary,	Alfred B. Taylor.
Treasurer,	Ambrose Smith.

Trustees.

Robert Bridges, M. D., Charles L. Eberle, T. M. Perot,
S. S. Bunting, James T. Shinn, Danl. S. Jones,
John M. Maisch, T. S. Wiegand.

Librarian, T. S. Wiegand.
Editor, William Procter, Jr.

Publishing Committee.

Charles Ellis, J. M. Maisch, A. B. Taylor.
W. Procter, Jr., T. S. Wiegand.

Curator, Thomas S Wiegand.

Sinking Fund.

T. S. Wiegand, T. M. Perot, James T. Shinn.

On motion it was resolved that the meetings of the College hereafter be held in the afternoon at 3½ P.M.

T. S. WIEGAND, *Secretary pro temp.*

Editorial Department.

PHARMACOPŒIA CONVENTION OF 1870.—The following official notice by Dr. Wood states what institutions have notified that officer of their intention to send delegates. Doubtless others will be represented who have failed to notify the President of the appointment of their delegates.

National Convention for Revising the Pharmacopœia.—In compliance with a resolution of the National Convention for revising the Pharmacopœia, directing that the names of the delegates announced to the President of the Convention as having been appointed to attend the Convention, to meet on the first Wednesday of May next, at Washington, be made public in the newspapers and medical journals in March, the following names of delegates are now published, with the date at which their appointment was made known to the President, in the order of their announcement:

May 27, 1869. St. Louis Medical College—A. Litton, M.D., J. S. B. Alleyne, M.D.

June 6, 1869. Maryland College of Pharmacy—Wm. S. Thompson, J. Faris Moore, Louis Dohme.

June 6, 1869. Missouri Medical College—Chas. O. Curtman, M.D.

June 25, 1869. St. Louis College of Pharmacy—O. F. Potter, M.D., Hubert Primm, M.D., Eugene L. Massott.

June 25, 1869. Chicago College of Pharmacy—Albert E. Ebert, Henry Biroth, C. Lewis Diehl. Alternates—Jas. W. Mill, F. Mahla, Ph. D., Louis Strehl.

August 9, 1869. Jefferson Medical College—John B. Biddle, M.D., B. Howard Rand, M.D.

Dec. 9, 1869. Medical Society of District of Columbia—Thos. Antisell, M.D., C. H. Lieberman, M.D., B. F. Creng, M.D.

Jan. 11, 1870. Medical College of Virginia—J. S. Wilford, M.D., R. S. J. Peebles, M.D.

Jan. 20, 1870. Massachusetts College of Pharmacy—Geo. F. H. Markoe, Samuel M. Colcord.

Feb. 1, 1870. Medical Society State of New York—Caleb Green, M.D., Wm. Manlius Smith, M.D., Edward R. Squibb, M.D.

Feb. 3, 1870. College of Physicians of Philadelphia—Geo. B. Wood, M.D., Robert Bridges, M.D., H. C. Wood, M D.

Feb. 15, 1870. College of Pharmacy of the City of New York—Wm. Hegeman, Wm. Neergaard, P. W. Bedford. Alternates—Theobold Frohwein, Augustus W. Weismann, Geo. C. Close.

Feb. 16, 1870. National Medical College (Medical Department of Columbia College), Washington—Geo. W. Dore, M.D., John C. Riley, M.D.

March 10, 1870. Medical Department of the University of Pennsylvania—Jos. Carson, M.D., Robt. E. Rogers, M.D.

March 18, 1870. Philadelphia College of Pharmacy—Wm. Procter, Jr., Prof. John M. Maisch, Alfred B. Taylor.

The following letter has been received by the President, offering the use of a hall for the meeting and subsequent sittings of the convention:

1407 New York Avenue,
Washington, D. C., Feb. 16, 1870.

Prof. George B. Wood, M.D.

My Dear Doctor—It affords me pleasure to inform you that at a recent meeting of the faculty of the National Medical College (Med. Dept. of Columbia College, Washington), the following resolution was unanimously adopted:

Resolved, That the Dean be instructed to tender to Prof. George B. Wood, the President of the Convention to revise the Pharmacopœia, held in 1860, the college buildings for the meeting to be held in May, 1870, and to make the necessary arrangements therefor.

The building is centrally situated, in the vicinity of the principal hotels, and is well suited for the purpose.

Respectfully, your obedient servant,
John C. Riley,
Dean of Faculty of National College.

Proposed Congress of Colleges of Pharmacy in relation to Education.—The following circular, issued by the Maryland College of Pharmacy, is deserving of attention:

At a stated meeting of the Maryland College of Pharmacy, held April 14th inst., the following resolution was unanimously adopted:

"*Resolved*, That a committee of five be appointed to request the several Pharmaceutical Associations of the United States to send delegates to a Convention, proposed to be held in the city of Baltimore in September next, at the time of the meeting of the American Pharmaceutical Association.

The purpose being to consult and determine upon the best uniform course of study for those learning the profession of pharmacy, and to recommend the same for adoption in the Schools of the several Associations they represent, to the end that there may be an uniform standard of qualification for all graduating in pharmacy."

Baltimore, April 21, 1870.

The undersigned Committee, in performing the duty assigned them, take pleasure in directing your attention to the foregoing resolution; believing that the importance of the matter in hand will commend itself to your favorable consideration, we most respectfully request you to send delegates to said Convention.

The Convention will meet at the Hall of the Maryland College of Pharmacy, and its sessions be so fixed as not to interfere with attendance at the sessions of the American Pharmaceutical Association.

The Maryland College of Pharmacy has appointed five delegates to said Convention, three of whom are professors in our College.

Be kind enough to acknowledge the receipt of this, and also notify the Committee promptly of your action in the premises.

Jos. Roberts, J. F. Hancock,
J. Brown Baxley, Jas. S. Stevenson, Jr.,
A. P. Sharp.

Chicago College School of Pharmacy.—In the April number of the Pharmacist the Editor authoritively announces the organization of a faculty under the auspices of the College, consisting as follows:

J. V. Z. Blaney, A.M., M.D., Prof. of Chemistry and Toxicology.

George M. Hambright, Pharmaceutist, Prof. of Materia Medica.

JOHN H. RAUCH, M.D., Prof. of Botany.

N. GRAY BARTLETT, Pharmaceutist, Prof. of Theory and Practice of Pharmacy.

The fees for tuition are: For matriculation, $2; lectures, including all the branches taught, $30; diploma fee, $5.

This effort has our best wishes, and, seconded by the well known energy of its supporters, we have no doubt that it will prove a success. The adoption of as high a standard of preparation as possible to be practicable will be wise, especially in view of the probable changes which may arise from the proposed Congress of Colleges proposed by the Maryland College.

PHARMACY IN NEW JERSEY—The initiative in the late movement towards organizing the pharmaceutists of New Jersey appears to have been taken at Newark, N. J., by a call published in the newspapers of that city calling for a joint meeting of physicians and druggists to draft a law "to regulate the sale of poisons." At that meeting (Jan. 26th) a committee was appointed to notify all the druggists in the State of an adjourned meeting to be held at Newark on the 17th of February. At the meeting then held the Committee reported a draft of a law, based on that of the Chicago meeting. About sixty druggists were present, and the proposed law discussed, amended and approved, and a committee appointed to present it to the Legislature. This law makes a State Society a necessity. The meeting adjourned to Feb. 24th, same place, to perfect the organization of the "New Jersey Pharmaceutical Association." This was accomplished, a Constitution and By-Laws were adopted, and officers elected for the ensuing year, and the meeting adjourned to meet in Trenton March 24th, at 10½ o'clock, A.M. The meeting at Trenton took place, but at this writing we have not been informed of its results.

PHARMACY IN EUROPE.—The following information, which has been gathered from *Pharmaceutisch Zeitung* and other journals, possesses more or less interest. The law of 21 Germ., XII, created in France three pharmaceutical schools,—at Paris, at Strassburg, and at Montpellier,—for the education and examination of apothecaries of the first class. Apothecaries of the second class were examined by a *medical jury* (one being located in each department), and could establish themselves in business only in the department in which they had been examined. In the departments of Seine, Hérauet, and Bas Rhin, containing the pharmaceutical schools, pharmaciens of the first class only could carry on business. The law of August 22, 1854, discontinued the *Juries Médicales* and established twenty-one preparatory schools for medicine and pharmacy, where pharmaciens of the second class are examined. These may, however, submit to an examination for the same degree at one of the pharmaceutical schools. In regard to the location of these pharmaciens, the Minister of Education, by a decree of Dec. 23, 1854, sustained the old law, but this decree was abrogated Nov. 30, 1867, by Minister of Educa-

tion Durug. After this the second class apothecaries commenced to enter business in the three cities named, which called forth a remonstrance from those of the first class, which not having effect on the Council of State, the case was taken to the Courts,—which tribunal, on the 19th of Feb., 1870, condemned six second class apothecaries to close their stores within two weeks after the publication of the decision, under a penalty of twenty-five francs for every day's delay, and to costs.

The City Council of Hymmegen, in Holland, has granted to the Artsenijmengkundige Vereeniging of that city the use of the laboratory and apparatus of the High School, with an annual subsidy. The Society has opened a pharmaceutical school to prepare clerks for the States examination. The biennial course embraces pharmaceutical botany, pharmacognosy, pharmacy and toxicology.

The Swiss apothecaries are considering the revision of the Pharmacopœia of Switzerland; they had a meeting at Olten on the 21st of March.

The plan to establish a University in Siberia is again under consideration by the Russian authorities. Several exiles having remained in Siberia after their terms of banishment had expired, have signified their willingness to accept professorships, to submit to the requisite examinations, and to perfect themselves in the languages of that country; among them are ten literati who studied at German Universities, and eight priests.

The elaboration of a new edition of the Pharmacopœia is to be entrusted to a special committee by the Federal Council of North Germany.

A case of poisoning by prussic acid vapor occurred in a chemical manufactory at Brussels by the fracture of a bottle containing 800 grammes of the poison. He was restored by dilute chlorine water and ammoniacal embrocations. A dog in the room at the time died from the effects of the vapor inhaled.

Chemical Mask.—Our attention has been called to a mask to protect the face, lungs and eyes from injury during chemical manipulations, especially in industrial processes, called Butcher's Artizan's Safety Mask and Respirator, gotten up by Mr. B. F. Butcher, of Philadelphia. It consists of a metallic mask for the upper part of the face, with glass eye-pieces. Attached to the lower portion is a silk sack, to include the chin and beard when worn. The edges of the metal have sponge sewn continuously around, projecting towards the face, and which is to be wet when the mask is worn. As this ring of sponge includes only the nose, the air inspired should be drawn through that organ, which causes it to pass through the pores of the sponge, and on this filtering action depends the value of the arrangement,—the lungs being emptied by way of the mouth. Its use is suggested for operatives in white lead factories, in powdering establishments, paper-hanging factories, where dust is the noxious agent, and in chemical works, where explosions and noxious absorbable gases are avoided.

FRENCH JUSTICE.—A Paris *pharmacien* has been subjected to a fine of one hundred francs, with costs, or to be imprisoned for forty days, as a penalty for supplying in a prescription a bottle of vin. cinchonæ of the French Codex, instead of "Seguin's cinchona wine." Additional to this, the unfortunate apothecary was compelled to have a copy of the judgment displayed on his door, and at the shops of nine other pharmaciens residing near him.

HONORS TO PARISIAN CHEMISTS.—M. Wurtz, chemist of Paris, has been elected Vice-President of the Academy of Medicine for 1870, and M. Bouis has been appointed to the chair of Toxicology in the Upper School of Pharmacy at Paris.

ERRATA.—Our readers are particularly requested to correct an annoying little error of the press in the article on Liquid Pepsin, by Mr. E. Scheffer, in the last number, at page 98, line 19 from top. Instead of the words, "possessing a faint and disagreeable odor," it should read, "possessing a faint, *not* disagreeable odor." The correction is so easily made that it should be done at once. *Also*, at page 134, article Sulpho-carbolate of Soda, at line 7 from top insert the words "of each" before the figures "16," so as to read, "Take of pure crystallized carbolic acid, (Calvert's), Sulphuric acid sp. gr. 1·84, of each 16 troy ounces."

The Dispensatory of the United States of America, by George B. Wood, M.D., &c., &c., &c., and *Franklin Bache, M.D., &c., &c.* Thirteenth edition, carefully revised. Philadelphia, J. B. Lippincott & Co., 1870. Pp. 1810, octavo.

When the twelfth edition of the Dispensatory was printed the work was stereotyped, and there was every prospect that a long time would elapse before a new revised edition would be forthcoming, but so rapid has been its sale, and so much new matter has been presented demanding notice, not forgetting the second edition of the British Pharmacopœia, that the author's well known thoroughness would not permit him to allow a further use of the plates before the work was revised; a labor of such magnitude as to have engaged him most of his time for more than a year,—not estimating the very considerable contributions towards it gradually accumulating on his hands since the previous edition issued. As the revision applies to the entire work, the additions enter into a large number of the articles, so that it is extremely difficult to give any idea of the added matter in a brief notice. Very much of this matter is in the form of foot-notes, in small print.

The changes in the British Pharmacopœia have added much to this work, so many articles having been restored that were omitted in the first edition of that code. The author has spared no pains to bring in all the recent information up to the time of printing each article, and where such notices are not found it is due to the article appearing too late. Even chloral has a place in the appendix, though first announced as a hypnotic long after the printing of the book had commenced.

Although about one-tenth larger, the book is not thicker, which has arisen from the use of paper strongly calendered, so as to condense its bulk and increase its smoothness,—which, together with its clear type, will render the work increasedly acceptable to the American apothecary and physician.

Michigan University Medical Journal, conducted by the Faculty of the Medical Department, Ann Arbor, Mich.: Monthly. March, 1870, Vol. I, No. 1, pp. 64.

This new medical monthly is placed on our list of exchanges. The managing editors are Drs. Henry S. Cheever, Preston B. Rose, Albert H. Prescott, and George E. Frothingham. The editors enter the lists in good spirits. Their number is formidable. If they can render their efforts homogeneous, and direct them to the purposes set forth in their initial editorial, they will benefit medicine, advance their institution, and reap personal honor.

In the April number, received since the above was written, Dr. Prescott has an excellent essay, entitled "Pharmaceutical Chemistry in its Relations to Medical Practice," and discusses the relations of Pharmacy to medicine. The following paragraph occurs:

"The relations which exist between the professions of medicine and pharmacy are peculiarly intimate. To a considerable extent identical preparatory studies are required for each; chemical science is fundamental to each: botany is valuable to each. The pharmaceutist must traverse the larger portion of the field of therapeutics and hygiene, and the physician must obtain acquaintance with pharmaceutical processes. It is true that after a time the student of pharmacy diverges upon a clearly marked path from the broader field of medicine; but when he enters the practice of his vocation, he returns to labor with the physician in every province of the healing art. The eye and the hand are not more closely connected in action than are the physician and pharmacist in the daily performance of duties for a common object."

Dr. Prescott considers this division of labor, and queries whether the responsibility is divided also? He takes the ground that in the present state of pharmaceutical practice, the physician *is* responsible in so far as he *can* direct his prescriptions to qualified pharmaceutists, and that he will continue to be so until "the pharmaceutist has an independent standing as an educated expert—a standing certified by diploma upon competent authority—then the physician becomes warranted in saying, 'I am not responsible for his branch of our profession.'"

The importance of chemistry as the ground work of pharmacy is strongly urged, and, with due allowance for Dr. Prescott's predilections for his favorite science, he offers many strong arguments why pharmaceutists should aim at a higher qualification and a more thorough preparation for their responsible duties.

The California Medical Gazette continues in its March issue "The Flora of San Francisco," devoting eight pages in each number. When complete it will be an interesting contribution to the literature of botany.

The Archives of Ophthalmology and Otology. Edited and published simultaneously in English and German, by Prof. H. Knapp, M.D., in New York, and Prof. S. Moos, M.D., in Heidelberg. Vol. I, No. 1. New York: William Wood & Co. Carlsruhe: Chr. Fr. Muller'sche Hofbuchhandlung, 1870. pp. 364, octavo, with eight lithographic plates, several of them colored.

Received from the publisher just as we are closing our columns. The work is elegantly gotten up and illustrated. It consists entirely of original articles, contributed by German and American writers, and is published half yearly, simultaneously at New York, in English, and at Carlsruhe, in German. It undoubtedly possesses many claims to the attention of medical and surgical readers. Price $7 a year.

On the Physical Basis of Life. By T. H. Huxley. LL. D., F. R. S. New Haven, Conn.: Charles C. Chatfield. pp. 35, 12mo.

This pamphlet is the reprint of a discourse originally delivered in Edinburg, November 18, 1868, and subsequently published in London in the *Fortnightly Review.* It deals with what has been called the new philosophy, in reference to organic life, and involves points of discussion which many approach with fear of a materialistic tendency to the doctrine of necessity; but the author repudiates that any such charge can be truthfully made in regard to his views. The nature of that which occurs in a single organic cell of a vegetable organism, by which carbonic acid water, and ammonia are converted into protein, or "protoplasm," as the author calls it; or in the cell of an animal organism, by which dead organic matter is converted also into protoplasm, is the question at issue. The highest organisms are but aggregates of cell action. Living matter is mineral matter under the influence of cell action. The action in an animal cell can only be sustained by the consumption of matter previously organized by cell action, whilst the vegetable cell is endowed with the power of transforming mineral into organic matter. The brain is the organ designed by the Creator to manifest intellect; it is a congeries of cells in ceaseless action. All cell action is attended by waste and growth. The act of thinking must, therefore, occasion waste, or excretion of substance, to be recuperated by growth or accretion. It therefore follows that the manifestation of thought and emotion are coincident with and dependent on cell action. But life in the cell is to us as wonderful and as inscrutable as life in a complex organism, and Almighty power as manifest in the one as the other.

The Arts, devoted to Science and Arts. A monthly journal by Joseph M. Hirsh, Ph.D., Chicago, Ill. Vol. I, No. 1; pp. 18, quarto. Price one dollar per annum.

This new enterprise, if judged by the first number, promises to be an interesting and useful publication, embracing a variety of topics. The price places it within the reach of a large number, and it merits a generous support. The frontispiece is a lithograph of the late Prof. Thomas Graham, of London.

Modern Therapeutics; a compendium of recent formulæ and specific therapeutical directions. By George H. Napheys, A.M., M.D., &c. Philadelphia, S. W. Butler, M.D., 1870; pp. 390, 12mo.

This formulary consists largely of recent prescriptions. Its groups are arranged from the therapeutical standpoint,—a feature rather unusual,—and, accompanied as they are by explanations bearing on treatment, are well calculated to prove useful to the physician in the selection of a remedy in cases where the treatment is not obvious. The prescriptions of many prominent physicians, as well at home as abroad, are presented, and give a freshness to the work that must address itself especially to the young practitioner. The price of the book is $2.25.

Paris Universal Exposition, 1867. *Reports of the U. S. Commissioners.* The progress and condition of several departments of industrial chemistry. By J. Lawrence Smith, U. S. Commissioner. Washington, Government Printing Office, 1869.

The notice already taken of the industrial products and processes of Class 44 of the Paris Exposition (see vol.), makes it unnecessary to say much in regard to this Report, which is chiefly devoted to the heavy branches of chemical manufactures, as sulphuric acid, soda salts, potash and its salts, chlorine products, coal tar products and saponification. The report contains much interesting information, most of which, however, has already transpired through the journals.

Half-Yearly Compendium of Medical Science. Part V. January, 1870. S. W. Butler, M.D., 115 South Seventh St., Philadelphia.

The Compendium, though rather behind time, contains the usual amount of useful information, gathered from about seventy-three different journals, and presented in nearly three hundred articles from sixty-nine American and two hundred and sixty-six foreign writers. Price $3 per annum.

Annuaire de Therapeutique, de Matiere Medicale de Pharmacie et de Toxicologie pour 1870, etc., par A. Bouchardat, Prof. d'hygiéne à la Faculté de Medecine de Paris, etc. Paris, Germer Bailliére, 1870; pp. 301, 18mo.

This is the thirtieth year of this useful little French annual, which makes its appearance regularly, and embraces a variety of articles of interest to the physician and pharmaceutist.

Letheomania; the result of the hypodermic injection of morphia (from the Pacific Med. Jour.) By Henry Gibbons, M.D.

This is a cautionary paper addressed to physicians, urging moderation in the use of this form of medication with narcotics, and especially to avoid the placing of its application in other than professional hands.

Valedictory Address to the Graduating Class at the Jefferson Medical College, by Prof. J. Aitken Meigs, at the 45th Commencement.

Finances of Pennsylvania. Report of the Auditor-General of the Commonwealth of Pennsylvania for the year ending November 30, 1869. Harrisburg, 1870. pp. 191.

Annual Address of the Hon. Charles P. Daly, LL.D., President, delivered before the American Geographical and Statistical Society, Jan. 25, 1870. New York, 1870; pp. 46.

This is a highly interesting résumé of the leading facts and discoveries relating to geographical science, giving a connected account of the various efforts recently made and making to extend the bounds of the known and well defined on the earth's present surface.

OBITUARY.

Dr. Joseph Redtenbacher, Professor of General and Pharmaceutical Chemistry in the University of Vienna, Austria, died in that city March 5.

On the same day and in the same city, died Franz Beckert, apothecary, and Director of the Austrian Apothecaries' Society, in his 74th year.

The celebrated botanist Franz Unger, born in Styria in 1800, was found dead in his bed at Graz, Austria, on the 13th of February. Having been indisposed for some time, it was supposed that he got up during the night, wounded the back of his head by a fall, went to bed again, and expired through paralysis of the brain. Subsequently foul play was suspected, and a near relative of the deceased was accused of the murder. The committee of the Vienna medical faculty, consisting of the Professors Dumreicher, Schroff and Dlauby, reported against the theory of death by violence.

Fred. Julius Otto, Professor of Technical Chemistry and Pharmacy in the Collegium Carolinum at Brunswick, Germany, died there on the 12th of January last. Born in Saxony Jan. 8th, 1809, he became a pharmacist, but soon devoted himself to teaching chemistry, and in 1833 accepted a call to Brunswick, where he remained until the time of his death. In 1837 he published his first work, "On the Rational Practice of the Technical Arts;" in 1852—56 his celebrated work on Chemistry, based upon Graham's Elements of Chemistry; in 1856, "On the Detection of Poisons;" in 1857, "On the Manufacture of Vinegar." Numerous essays of his are scattered through various chemical journals. In his death pharmacy has lost one of her brightest disciples, and chemistry one of her most devoted experts.

M. Fr. Kirschleger died on the 15th of November, 1869, in his 66th year, having been born on the 6th of January, 1804, at Munster (Haut Rhin). He was apprenticed to M. Suffert, of Ribeauville, as a pharmacien. He also studied for some time with M. Charles Nesler, Prof. of Botany and Pharmacien-in-Chief of the Civil Hospitals. In 1827 he went to Paris, and in 1828 sustained his thesis for the Doctorate. In 1834 he established himself at Strasburg, and afterwards became Professor of Botany at the School of Pharmacy there.

The works of M. Kirschleger are chiefly botanical, and include a prodromus of the Flora of Alsace. In 1852 he commenced the publication of the Flora of Alsace, and continued it through several volumes.